Sounding out the Past

exarc.net/podcast/sounding-out-past

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Guests
Lara Comis (IE) and Simon Wyatt (UK)
Introduction
This episode of **The EXARC Show** features Finally Friday guests Lara Comis and Simon Wyatt for “Sounding Out the Past". We have two different perspectives on the topic of sounds this month, Lara focusing on collecting ambient sounds relating to archaeological open air museum activities and crafts, and Simon exploring musical instruments of the past. Host Matilda Siebrecht listens in as our guests discuss some of the cognitive underpinnings of how we process sound, the many ways that sounds and music play into lives in the past, and the value of pausing and listening to the world around us. Tune in for conversation interspersed with soundscapes and reconstructed musical instruments to give your ears a treat from the past! As always, Finally Friday starts with a conversation between our guests and wraps up with questions from participants in the EXARC Discord. More information on joining us for future events can be found on The EXARC Show website.

Transcript
Matilda: Hello and welcome to #FinallyFriday. This chat session is run by EXARC, the society for archaeological open-air museums, experimental archaeology, ancient technology and interpretation. My name is Matilda Siebrecht and today I’m joined by two specialists focussing on the archaeology of music and soundscapes of archaeology. Simon Wyatt is an experimental archaeologist with interests in basket weaving and pottery, although his central focus is on the archaeology of music. His research covers a range of topics related to this theme, including the advent of music in the Palaeolithic, the variety of objects that could have been used to create music in the past, and the significance of location when playing instruments. He is also interested in recent developments in sensory archaeology and anthropology, as well considering the neuropsychology of musical experience.

Lara Comis is a PhD Candidate in experimental archaeology at University College Dublin. Her central research focuses on the use of experimental archaeology in open-air museums, using social science methods and citizen science approaches. She is also the founder of ABADIR, a SoundCloud channel that aims to share soundscapes of the human past through experimental archaeology, ancient technology and re-enactment.

So welcome to both of you. So, I have one quick question, just probably an easy one just to get you started in this discussion: although you’re both approaching the topic from slightly different angles both of you are very obviously involved with investigating sound. How did that investigation start and why do you think that it is important to look at sound?

Simon: As a child, my parents made me join a choir, and I was forced to also play the violin from an early age. So I’ve always been aware, even if I didn’t make nice noises, I was aware of them, and as an undergraduate my dissertation supervisor was a specialist in the TRB, the Trichterbecher culture, which is the first Neolithic on the North-European plain and the thing about the TRB culture is, for about 600 years,

from 3300 down to 2700 BC, it's full of finds of ceramic objects which are generally interpreted by archaeologists to be drums. Once I found that out I was stuck for life I think.

Why it's important? I think, music archaeology, is the term that is generally used, nowadays, but it relates to the sensory approaches that have come to the fore recently in anthropology and museum studies, and it is just one of the ones I think that can probably be used more easily in a museum space to present it to people than having things that are smelly or things that they can touch and perhaps damage. And I think this sensory appeal, it comes down to perception and which is constructed from our sensory interaction from all the means: touch, smell, hearing, sight, and bound together with our previous experience and what's impressive is I think, that all these different senses, they can affect the way they each work. So, for example, if we're warm, when we feel warm, it actually has been shown to increase our interpersonal warmth, we're more friendly to other people. Even if, when we get round to attempting to make sound with the objects, it's not what modern people might term to be music, it brings us closer to our ancestors I think. And in fact I think we could go further and say that when we perceive sound, we're perceiving an intentional agency and the premotor cortex area of our brain is activated when we are perceiving that some other agent is acting or communicating, say, with us. In ethnomusicology, there's a lady called Elizabeth Tolbert. She says that we sense music as though it's a voice and it's a type of communication. We all have an idea in our head of the sound of flint knapping, now, in Britain some Neolithic long barrows have large piles of flint flakes deposited in the ditches. But when they were excavated and the flakes were studied it was found that they could be put back together and no physical object had been removed from the nodular flint. So the knapping was not being done to produce tools and perhaps we might think that you wouldn't do that in the ditch of the burial mound of your ancestors anyway. But perhaps the sound was the important thing; the knapping was done so the sound existed in the burial site.

Matilda: That's really interesting, that actually very much relates, I think, to what it is your research focuses on Lara, am I correct?

Lara: First of all, thank you for having me. This is a very good thing to do especially when we're dealing with sounds and the link with the past through sensory aspects. I'm not actually very much interested in sound. My interest in arriving and setting things up in SoundCloud, the avenue that brought me here and trying to open this account in SoundCloud, is not actually to research the sounds themselves as they are. It was more an intent of sharing things with people, and also bringing together people that belong to the academic side of the world, and also people who don't belong to the academic side of the world and can contribute a lot, especially with the sensory perspectives from in the past. So I think that sound, among all the senses, is the one I perfectly agree with what Simon said before, it really speaks an international language. So if we were to use this metaphor of language, it is really nice that sound was associated with the voice and not with the word. So it is different, like with animals. We could recognize an animal from a voice even if animals do not use words to express themselves. I think that soundscapes, like mine, are basically soundscapes like raw materials. So they can be interpreted, they can be also listened to in a wider way, like in a more open way. They can also speak to people who have no background in archaeology, they have no background in music. It's an internationally understood language. This is one of the aspects because I chose sound as a mean and research perspective through the sensory aspect. The second is that I was actually looking forward to helping the experimental archaeology, re-enactment and archaeological open-air museums community during the lockdown and I thought that soundscapes could really be something that could help everyone in their own little places they could have a connection, through the internet. You don't need a subscription to the SoundCloud server and it was also something that I did because I wanted people to have a chance to listen and to contribute. So in two words what I'm trying to do is actually setting up a citizen science project and bring together the highest standard researchers and the "normal", the normal people who maybe are hobbyists are bricolage amateurs, in ancient technology or re-enactors and can contribute to this.

Matilda: So very different angles of the research into sound or music of the past, but obviously a very important one of that. And as this episode is focussed on the sound of music, we thought it would be a great possibility to share some of your work with the listeners. Simon, is there one in particular that you think we should start with that's an interesting reproduction that you've made?

Simon: The simplest, which is, shall we say less rigorous, is here I have a recording of a model of two of the drums of the TRB culture, from about 3000 BC, and over the top I've recorded a very primitive mouth bow, which is a piece of hazel stick and tied with a piece of ivy, and then I've got two different size cow horns, one's a side-blown one, one's an end-blown. I think it comes together quite nicely.

[music]

Matilda: That's very cool. Can I ask a quick question, ignorant of horn morphology, so you mention there we have two cow horns, do they have to be different sizes, different shapes, in order to make the different pitches?

Simon: Yes, the longer a tube is, the deeper the fundamental pitch is. So one of those is maybe 2.5-3 feet long, so just about 90cms, and the smaller one is about 35-40 cm. The short one has a hole in the end, so it's blown almost like a trumpet. The second one has a hole about 15 cm from the end. And what I've done there is- horn doesn't survive very well in the archaeological record but in the Bronze age particularly, Ireland is famous for bronze cast horns and they come in pairs. One is side-blown and the one with it is end-blown. So what I did was made an assumption that perhaps the precursors would have had a side-blown end as well, so that's where I went with that. I think the bigger it is, you have to alter your playing technique. The smaller horn you can play in the style of a lip reed instrument like a trumpet, so quite tight, but the bigger one, because it's got a larger mouth hole, when you blow, you have to play in a more relaxed way, more like a didgeridoo. It's less strain on your body.

Matilda: Thanks for sharing Simon, I'm always amazed how talented musicians can be in sort of reproducing potential sounds of the past. But of course Lara, you work as you mentioned with sort of more soundscapes, which perhaps you have sort of an example of one, maybe you can also explain exactly what a soundscape is.

Lara: Yes, so the major difference is, two major differences, is that I am not the author, so my project is basically set up to make people share what they actually recorded, or they authored, if they created a piece of art based on ancient tools. And the second is that soundscapes that I share are not exactly recorded for a purpose, so they might be accidentally recorded. So it is why I was referring to them as raw materials. In

previous projects, that were using soundscapes in the world of archaeology, especially one project, about the Mesolithic, is exactly doing that kind of mapping these soundscapes of the Mesolithic, their project was basically aimed to be shared in museum settings only or used for further research. But the ABADIR project is basically trying to bring people together and discuss things. One of the most important for me, is the flint axes working wood at Butser Ancient Farm, so if you want we can play it now.

[soundscape]

Simon: Very, very cool.

Lara: This was recorded in Butser Ancient Farm, and it was actually played during the Berlin conference, the online conference that we had at the end of March, by Trevor Creighton and he was the one that actually pointed out how imported soundscapes were, even if, again, it is something that is not orchestrated. Something that is surrounding us and you can hear the voices of the people around and the different pitches of the different tools and the resonance of the wood. It's something that can actually be perceived. What do you think, Simon, about it? Do you hear that kind of different pitches?

Simon: It's almost like a rhythmic track, it's quite remarkable. I remember as a kid, going to a French, I think it was called woodcutters festival, and it was in the Alps, and it was just tons of guys standing around with axes chopping trees and the sound was quite a phenomenal experience, because it really gets into your head, that repetitive, rhythmic sound.

Lara: Yes, you know, the fact that this is actually resonance, it made me think back of a story that is told about Pythagoras, the Greek Philosopher, when he passed near a blacksmith and he could hear the differences in sound and then after doing a lot of tests he actually discovered harmony basically, and of course it would be fantastic. I have to say that all the tracks that have been uploaded in ABADIR are under a creative commons so basically everyone can use them. It's a nice thing to advise the people who actually did the recording, so if you click the single tracks you will find a thorough description of where it was recorded, by whom and in case there is an author you can use them for making whatever you want. Absolutely, it would be fantastic.

Simon: I think modern music is often over-engineered. When it sounds, as you would have it, more raw, there's something quite magical in that. There's a music archaeologist called Graham Lawson, he suggests that this ability to pay attention to changes in senses as we are working with objects and feeling the change and hearing the changes, like the way the wood was resonating with those axes, he proposed maybe that the sound of objects were in fact possibly driving changes in technology. His key example is an object which I would actually believe, probably, is a flute from a cave in Germany called Geissenklösterle, and it's made from mammoth ivory. These people, around 43,000 BC, they were taking a tusk of a mammoth, shaping it and then splitting it open, hollowing it and gluing it back together. It's quite a bizarre thing to do when they're far more easy options available to you. I suppose it shows the value of music, but also maybe music is driving changes that were happening in technology at the time.

Lara: That's really, really interesting what you were saying because I feel that yes, aesthetics, really aesthetical pleasure, can also be linked to sounds, music, I think it was with human beings from the start. We know that already so if we see it for the visual arts for example, I wonder why we have still doubts about the fact that we're putting a lot of efforts in trying to find the pleasing sounds, we're choosing the right material and doing a lot of work to obtain the sound that they wanted. There was recently a masters student here at the University of Dublin and he was investigating a bronze disc. So he was basically hitting the bronze, after it was heated on the forge, and then with a hammer the tones were changing a bit, so I actually took my phone with an app that measures hertz, trying to figure out when the sound changed because probably when the sound changed the temperature was too low, we could not beat it anymore. So this feeds back to the sensory archaeology and what I'm trying to do from a methodological perspective in experimental archaeology, is actually to frame this aspect, so the sensory aspect to some experiments and recognizing that they have a very important indicator role. So whether they are driving changes or they are side note, changing temperature or whatever it is which is linked with all the senses of course, as they say it's an assemblage, it's all the senses together.

Simon: Ears and eyes. I'd like to pick up on your comment on aesthetics. I'm a huge fan of an anthropologist called John Blacking and he was thinking all the behaviours that we have, which we use for -not necessarily musical- but things we do that are rhythmic and therefore in a sense they are musical and he pinpointed symmetrical hand axes from the Palaeolithic, and he suggested that these are objects of immense beauty and for them to have conceived of those he suggests that, first of all, it's a rhythmic process to manufacture the axe, but it would also be a sonic process. He suggests that not only is the axe therefore a reflection of conceptual thought but maybe being able to do something rhythmic and produce something symmetrical, actually was one of the steps towards our first production of conceptual thought when we truly became as, Ellen Dissanayake, she has a book Homo Aestheticus, maybe that was the one of the peaks of our evolution, becoming an aesthetic person.

Matilda: Maybe we could listen to another of your pieces, Simon, I know that you have prepared a couple for us, is there one you would like to go to next?

Simon: The one called the Isturitz playing techniques. There's a cave in the western end of the Pyrenees which is renowned in archaeology because it has an immense stratigraphic record. The cave's called Isturitz and inside it they discovered the fragments of 22 vulture bones with holes in them and most of them are fragmentary. In the 1990s Dominique Buisson was going through the finds from these original excavations and he found a fragment of a vulture bone that was from an excavation the catalogue number suggested it was from 1913. And he found a fragment in a different box from a different excavation from 1939. And they fitted together and it is, as far as I know currently, it is the most complete prehistoric aerophone there is. An aerophone is a wind instrument, so it is broken in the middle but it fits together. The top end, presumably the end we would use as the embouchure, and the bottom end are fairly intact so we know the actual length and we know it has four finger holes. Now the first publication to this suggested it was maybe a pot for keeping needles in but it's generally accepted today

that it is a wind instrument but again we don't know what their aesthetics were when it comes to sound. And so we don't know how it sounded and it can be done in many different ways so the recording we are about to hear presents a series of different ways of sounding this bone. This is made on a cast model of it, not in the original bone

First of all it's the sound of just your fingertips slapping onto the holes. Then it's played as a diagonal flute, blowing on the top left hand of the embouchure hole. Then it's played in the Iranian way, which is an interdental technique, placing the edge in between the gap that your top incisors have and blowing across your tongue. You have to play slightly diagonally, down to your bottom left canine. That gives a very wispy sound. Then it's played like a Japanese shakuhachi which can give far more emotion, there's techniques there where you can add things like vibrato and so you can hear that there. Then it's followed by playing it as a lip reed instrument, or a trumpet. And finally I cheated and recorded it twice with a reed, so it plays a little duet.

Matilda: Ok, a lot to look forward to, also I'm curious how many people tried to make that whistling noise with their incisors because I know I definitely was just trying to do things with my mouth. Let's see what it hears like from a professional musician.

[music]

Matilda: It's amazing that one instrument can make so many different sounds.

Simon: It's not only that. I can play it upside down as a flute and it does give a whole new dimension to that as well. So you could play either way on that object.

Lara: It is absolutely amazing to see the versatility of one reconstruction and to see how it can really return a creative output when put in the right hands. If it was for me, I don't know all the different ways that you can play a flute.

Simon: When I started I started with a goose bone in about 2008, and it took me six months of horrible noises before I got the embouchure to work, playing as a diagonal flute. So it has taken me twelve years to get to the point where I can demonstrate those different options.

Lara: The last part of the recording that we just heard, really reminded me of the txirula, the flutes that were played in the ancient Mediterranean, apart from the Greek and Roman sides actually, Etruscan in the middle. Something has got a little bit of memory also to it, or association, and I think that this exercise that we're doing today is really also seeing, where does this sound recall something in my memory, it's got something of my culture, or it's like this and this is why I believe that sound is such a good tool for communicating and engaging people basically. And then I must say that you know, I want to see the reproduction that you're playing because I'm really curious now about this artefact, which otherwise I would not maybe be so intrigued with, if I didn't hear the recording, you know what I mean?

This sound really reminded me of another thing that's been published in ABADIR. This is not an experimental archaeology project, it was actually recorded by me, with no filters, no nothing, so it's a very rough kind of sound, for an Etruscan re-enactment. I was trying to convey the idea of the fersu, the fersu is an important actor in ritual activities that usually were performed in funerary practices. This character is always dancing and playing, there's always music. Of course we don't have any written sources about ancient music and in Italy there are very fantastic groups that are working on the reconstruction of sound and music in the ancient world, like Synaulia for example, and this one I think really reminded me about the last part of the recording that you had, Simon. So if you want we can just listen to it, briefly.

Simon: Love to, absolutely.

[music]

Matilda: Those were replicated instruments as well?

Lara: Yes, those are replicated instruments and they're played during this kind of parade which was performed at the ritual sacrifices and dances that were carried out usually for ceremonies after someone died in the ancient Etruscan world. This group has taken what they had and trying to reconstruct both the dancing and the sounds and you can see, you can hear in the recording maybe that this group is passing by. There is people chatting and I think it was a very good soundscape this one, as it also has the human activity and it's not just work this one. It's not like someone who is building a tool or constructing something, but actually celebrating something with other people so I really appreciate the contribution that re-enactors have in this world, and if I was looking at them from a citizens science perspective, re-enactors should be called the makers. And I think they have a lot to contribute. What was said before about soundscapes in the article by Ben Elliott in the Sensory Archaeology Handbook, was that it was probably necessary to go out of the comfort zone of the conventional academic practice. I think that sound can be a fantastic way to also bridge and start a dialogue among people who are not professional researchers but maybe they are professional re-enactors or craft people and bringing them all together. In open-air archaeological museums, that would be the best. But of course this is just a first step in the project.

Simon: I think getting more people involved that way, especially ones who are so engaged to attempt to produce sound, is really crucial. They have an idea in ethnomusicology that they call bi-musicality where you try and understand objects through their practical use. Some knowledge it relies on producing sound and developing abilities and exploring the subtlety and the nuance you can get from an object. Many academics don't verge on that side, there are lots who do, but I think it is really keen, it is really important to get into the sound.

Lara: Yes, yes, indeed.

Matilda: On which note, I believe your third piece that you prepared for us today Simon, has something a bit related to that.

Simon: Do you want me to say it first, or should we listen first and then I'll speak?

Matilda: This one it might be interesting to say it afterwards.

Simon: This is an attempt to create a soundscape. I've telescoped time, so the sounds are the manufacturing of a swan bone instrument and the playing in different techniques but put together all at the same time.

Matilda: Sounds intriguing, let's give it a listen.

[soundscape/music]

Matilda: I thought we were going to start hearing some techno there at the beginning!

Lara: It's fantastic, can I say something? It's great. This is just great. This is a work of art.

Simon: Thank you. The idea is when, one day when I get a recording of an actual swan call, I will add that at the beginning. So thinking of objects as sound producers rather than instruments is a way of making a noise with a bone which is instead of blowing, you suck, and you do it really quite rapidly, so you make almost a kissing sound as you pull air in and it produces that sound at the beginning. And people interpret them where they're found as trying to make an animal call, presumably in hunting to draw them to you. So I started with my hope of sounding a bit like a swan, then I simply put the hole end of the bone, which has three holes, in my mouth and just blow. And I'm not making an embouchure like any form of wind instrument, but, because there are three holes which are cut in the bone, they have very fine edges and if you move your fingers you get a sort, a very weird sort of whistley, wispy sound. Then I carry on the blowing and very quickly move my tongue to block the end and you get this sort of slapping sound. And I moved on to playing it with a flute embouchure and finally again - I am a sucker for making a duet - so it's the same bone with a little reed stuck in the end with a bit of bees wax and then played as a little duet. I carry on the little bird calls over the top but it's all placed over the recording of me cutting that bone with the piece of flint and then scraping the finger holes out. It's very nice, I like that sound, it's almost like a little rasp.

Lara: I think you can actually perceive the rotational movement. Did you drill it?

Simon: No, no it's not drilling, it's scraping down cause they're slightly bevelled.

Lara: Ah ok, so it's scraping.

Simon: I'm guessing my flint wasn't perfect and the bone has imperfections and you get this very sort of raspy noise, which is quite cool I think. Cause it finished on a sort of a tune, hence there it starts off a bit messy and hence the title of Ugly Duckling.

Matilda: Lara, if you have one more that you'd like to share then we've had three from both of you and then we can finish off and get to the live session?

Lara: Let's move to something very, very soft. It's an activity performed here, it was a workshop on dry felting. It is a very soft sound and I realised, I was actually doing this workshop and I was actually participating, so I had my needle and I was doing my thing. Then I realised that everyone was silent, it was possible to hear this fantastic soundscape of people doing the same activity together with all their different rhythms and very concentrated. It was a very peaceful moment. Yes, I would like to hear this with you.

[soundscape]

Simon: That's really an ingenious thing to do. I'm kicking myself. I made a felt waistcoat and I never thought of recording the sound.

Lara: That's it, that's exactly it: sometimes we are engaged in activities and we're so engaged we cannot really pay attention also to the sounds that we're making.

Simon: If you do though, when it's such a quiet sound, it really draws you in, and it's a very meditative experience.

Lara: This is why I think also paying attention to the little details and maybe bring your phone over there and do a voice recording, with the normal thing that you have in the phone, sometimes can really return something. It wasn't the scope, it wasn't of me recording a soundscape during this workshop, but yet I could see, I could perceive this kind of rhythmic patterns and I think it's interesting, it is a soundscape. It's something that really doesn't need to be pre-arranged, the human activities, is basically the background for it.

Simon: I think it's the sort of sound though, that once you grow up, and you hear it again, and you remember lying with your parents when that was being done, it would suck you back into your childhood.

Lara: Yes, I believe the sensory aspect is so precise when drawing back memories, especially sound as you said, but also sense of smell is very, very powerful. So people that come over and see a demonstration of an ancient technology activity for example that uses charcoal burning or other things like that and they smell it. They say always: I remember that my grandfather or something else happened in my past and it actually had the same exact smell and that triggers back. Can you tell me something more about that Simon?

Simon: About triggering smells?

Lara: The memories. From what you were saying before that you are interested also in the neurological aspects of sound. Does it have something to do with memories, does your work?

Simon: I've read a guy whom I correspond with in America, called Clint Goss, and he did a piece of work where they were recording brain wave frequencies and he suggests that, when you're focussed on playing a flute, it lowers your brain wave frequencies to what are known as Delta waves. We have Delta wave activity in our brains during non-REM sleep and that is the point of sleep when our brain is constructing memories from our previous days' experiences. So I'm wondering if, when you're making sounds, and you're in that moment, maybe that's why, when we grow up, we are able to suddenly jump back, it's because our brain has entered the Delta wave state and our brains are focussed on constructing memories at that moment.

Matilda: So if someone says you play the flute like a dream, it really is, like a dream?

Simon: Of all the things you can play I think - along with the discussion of sensory archaeology - there's a big movement at the moment, everything has become, everyone talks of embodiedness or embodiment and by that, it's our whole perception changes. Our body becomes extended maybe. There's a point when you're playing an instrument and the point where your sensing of touch, say, when you're playing a violin, is not in your hands. Your point of the extremity of yourself is the point of your bow where it is on the string. I think with an aerophone, no, with a flute rather, where the point of sound production is your breath, I think that is the nearest thing to a voice. Flutes can evoke such emotion, it's quite astounding. But the fact that it's the sound production is the thing that keeps you alive, I think, that's why it has such a primeval tug on it.

Matilda: I'm going to ask you one more question, and on behalf of EXARC, thank you first of all for a really interesting discussion. This was a little bit of a different format to what we've done before. I think it was fantastic, it was really nice to have the context behind all these pieces that you made. Like Lara was saying, I wouldn't necessarily be as interested, but now I know what it is, I'm really interested. It's the same for me, same for a lot of our listeners as well about both of your pieces that you have presented here. So a final question before we open this up to our listeners. What are your plans for the future and how can the EXARC community help to make a difference for you in regards to the points that you discussed today or for your future plans?

Simon: For the future, I'm always working on perfecting my reed making, which I adore and my wife thinks sounds like a drunk mosquito. I'm also working on making a model of the Geissenklösterle mammoth ivory flute which is a lot more time-consuming than I ever imagined.

EXARC, what EXARC could do, I was at the EXARC conference at St Fagan's in Wales a few years ago and I thought they should have had archaeology music for the evening. I thought: Oh, what a missed opportunity!

Lara: Absolutely, no no Simon, absolutely, yes, we need more archaeology of music in EXARC, I agree with that.

Matilda: In all of the talks we've had, it's always alluded to, but this is the first one that's really focused on the sensory aspect, you're talking about smells as well. That could be something interesting there.

Lara: The thing that I wanted just to say is first of all thank you for having me again, and for the future the project ABADIR, the page is going to be there for at least another year. I think with EXARC I will probably ask, and who knows maybe during the live session of this #FinallyFriday, be to have a call what's there and try to involve as many people as possible, trying to involve all of the groups and experimental archaeologists and open-air archaeological museums too they did already, so you can actually see a few soundscapes that were recorded in open-air archaeological museums to contribute to this page, and this is the scope, the future of this project and what I'm seeing in perspective, is going to last one year only. After that we need to see whether I can go further because I should be finishing my PhD. So it's going to be a little bit more difficult to find resources to carry on in some other ways. I think you know EXARC is the perfect platform to share this new attention to sensory aspects in experimental archaeology.

Matilda: We will now be having a live question & answer session with people who have been listening in to the discussion so far.

So, let me go to the first question here, from Caroline: a question for both Lara and Simon: what kinds of soundscapes and music archaeology recordings are you most interested in hearing or collecting? So you mentioned at the end for example Lara, that you wanted to give a call to arms, so to speak, for this thing.

Lara: Yes, if I can answer this question, and thank you Caroline for it. Again, in my perspective, I'm very curious about everything. So I am not specifically looking forward for a specific thing, I'm actually more happy if I can expand the spectrum of soundscapes, so if anyone wants to come and give their contribution they can contact me at laracomis73@gmail.com and we can have a chat about that. Basically you can look at the tracks on SoundCloud and see what is the information that I require. It is possible to choose what kind of copyright you have. Since you know it is a non-profit project and I would like to see actually research papers performed on what was shared, other than focussing on one single aspect.

Simon: I'd like to see people recording everything. I made a nice recording just last week. In our garden we have a bird box and it's been abandoned by the birds, but apparently some bumble bees have taken up residence and I got a really nice recording of bumble bees they're just sitting there in the evening and buzz away.

Matilda: So natural sounds. That actually relates to this next question from Ligeri: Mindblowing sounds by the Isturitz flute! And playing these sounds inside the Isturitz cave itself, or any other cave, where there are places with powerful resonance, should have made a great impression to the human ear and the human spirit. Have you examined this aspect of music and soundscapes, so the natural environment's potential combined with the instruments and with voice?

Simon: I participated in the "Songs of the Caves" project, about six of seven years ago, and I actually had the opportunity of sitting in Spanish caves in Cantabria next to amazing art for a week and making sounds. If you check out the songs at the cave website, which is a Wordpress site (https://songsofthecaves.wordpress.com/), you can see a video of [part of] the project and also quite a few recordings in lovely caves, some of which people can visit, some which aren't open to the public. And it is, playing an instrument in a cave, next to art that's perhaps 40,000 years old, it's quite a remarkable experience. I think the acoustics of a place can really trigger things within you, when you're playing sounds, which creates something very special. When I sit at home and I play bones and I play other instruments and you know it can be fun but rather mundane, and when you step into a place which has an impressive acoustic suddenly, subconsciously you're inspired, and what you play is just quite different, quite existential and beautiful.

Lara: If I can add something to this question? It is a very, very interesting work that was done, and I have listened to a lot of the "Sounds of the Caves" that Simon was referring to. There is also an on-going ERC-project that's called ArtSoundscapes (https://www.ub.edu/artsoundscapes/) altogether, based in Barcelona. Also, there has been a lot of research also being done just on the soundscapes of archaeological sites. So there is another thread, there is like another branch of this. So what is the actual resonance, what are the sounds of the monuments, of archaeological sites. I think it's very, very nice when all these things come together. We invite you to listen to the soundscape from this Mesolithic archaeology project, which is about 30 minutes long, and it's like a journey and that moves through the landscape, you can hear the landscape, you can hear the human actions, you can see/hear the animals – sorry for these lapses between hear and see – and it's really an experience that goes beyond the single person, as Simon said, it goes beyond time. It's an amazing experience.

Matilda: It is interesting when you say that the link between hearing and seeing, as you were saying in your discussion earlier is that the sort of memories, you can already see something if you can hear it. I will move on to the next question from Giovanna: When they were doing their PhD research, they did a lot of hammering on metal and they became very interested in entrainment, the influence of rhythmic sound on activities. I found that when I was hammering, others would fall into a similar rhythm without thinking about it. Entrainment was outside their research area, but they never lost interest in the phenomenon, so Giovanna would be interested in what you guys think about entrainment as part of the soundscape.

Lara: I must say that it is a very interesting thing and I think it should be researched more, and it would be a perfect occasion for doing research on this, would be to run a workshop for example, on whatever activity that makes sound, so there are many, that make sound in an open-air archaeological museum. So Giovanna you could do a workshop in one of the archaeological museums around the world with, I don't know, 20 participants and we could record what happens. So we could actually gather some data. It would really be nice to run this experiment actually, thank you for this observation. What about you Simon, what do you think about it?

Simon: It makes me think of something that I should have said when you asked me about memory, which is that entrainment is when things sort of move in sync with each other. I think originally, it was first identified a couple of hundred years ago and I can't remember the guy's name, but he'd noticed that if you put proper clocks, as wind-up ones, in a room together, and you give it time, they all end up working in time together. And it's the same with people. And sound is one of the things that drives it forward. There's lots of research, just in the last few years, that explores this, so they show that when a musician plays, the different regions of their brain become synchronized, with the same brain wave patterns. Not only that, they show that brain wave patterns synchronization occurs between musicians playing together. What's further interesting there is that some neuroscientists have recently done research where they give quite gentle electrical stimulation to the surface of the head and they show that by using electrical pulses they can synchronize again different regions of the brain, but once brain wave patterns are synchronized, the brain is able to communicate more competently, is more efficient and people remember better. It is particularly shown that when brain waves in different regions of the brain are in sync, it boosts your episodic memory. So for your question about memory, by becoming entrained we are encouraging ourselves to remember things.

Matilda: Related to that, I have a quick question in terms of the sort of link with memory: how do you think that we can use this idea or this research area further in topics such as cultural heritage, open-air museums, deeper investigation of this?

Lara: Well again, since the approach that I have in this project is a citizen's science and so it is basically a project that aims to turn into a co-creative knowledge about the past. It would be in open-air archaeological museums, again, that I see the most potential and bringing together the research perspective. I'm not even sure now what about the sensory aspect of it, but that doesn't mean that other aspects of research would be left out. There are many levels we can be in an activity carried out in open-air archaeological museums with people, call them visitors, call them community, call them citizens, it doesn't matter. So there is a lot of potential over there and in my perspective my aim, my scope would be really to co-create together a vision of the past.

Simon: That sounds quite wonderful, yeah. I carried out a little project where I presented museum visitors with sounds that I had recorded to go with particular objects and I asked them to look at the objects first and then come back and we chatted and then I gave them a recording to listen to while they re-looked at the different objects, and their reactions were quite astounding. It made it far more vivid for them and some imagined themselves sitting there beside these people by a fire, dancing. It really brought up their own memories and combined it with what was presented by the museum itself about the objects.

Matilda: I can imagine that would really definitely, like you say, bring it to life so to speak. We just have a, more of a comment from Rig, saying I'm always interested in how the background sounds lead into music. When smelting iron, getting a constant air pressure on the bellows is key, so I sing with the bellows to keep the beat.

Actually I've observed this also in ethnographic studies, especially in traditional blacksmithing, like, yeah smelting I suppose, so to keep the air pressure. So that's also similar to what you were both saying before.

Lucy-Anne has a question for Simon. With the vulture ulna bone pipe, a lot of the more recent research I have read, such as some of that produced by EMAP, suggests it was most likely to have been a kind of clarinet with a birch bark reed. I was wondering what your thoughts are on this and why either that or other solutions might be more likely? Additionally, what kind of reeds were you using on the reproduction that you made?

Simon: It depends on which instrument you are referring to cause the EMAP site (http://www.emaproject.eu/) for anyone listening, EMAP is the European Music Archaeology Project, which has been touring Europe for several years, with multiple reconstructions of various period instruments. The one you've just heard, the Isturitz pipe, is made from an ulna, a vulture, which is quite fat, it's as fat as my little finger at the narrow end, and that the wider bore of a tube is, the more likely I think it is to be played as a flute. The narrower it is, the more likely it is to maybe have a reed inserted. That's not a strict thing though. The model I think you're referring to at the EMAP project website is the Geissenklösterle – and it is a vulture bone but it's not a vulture ulna, it's a vulture radius, which is much more narrow. The internal bore is maybe 5 – it's not nice and cylindrical at all – but it's probably about 5 millimetres, maybe 6 at some points or 4 at others, and that find actually has almost a double-notched end. I've made several versions of that and spent years sitting, and I really do mean years sitting, trying to play that as a flute and on the vulture bone versions I can barely get in the notes, two or three at the most and it's such a struggle. But the fact that it has this wedge-shaped edge makes it quite reminiscent of a clarinet. I have made models of that, where I've made a reed with bone, I tried bone, I tried a piece of horn - horn's quite nice - and I've tried a very fine pared down sliver of feather. It's Jean-Loup Ringot who has made a model with a birch bark that you're referring to. But as I say that one I can't play as a flute, but I can play it with a reed. Jean-Loup, I think he's got a nice expression when he's talking about the model like the Isturitz one, which is: If I want to change the atmosphere I add a reed. And as I've demonstrated, there are multiple ways of producing sound and I think we're very ingenious to try all these different versions, but whether we know or will find out which was their version or whether they were just as ingenious, I'm not sure. I actually meant Hohlefels, not Geissenklösterle.

Matilda: OK, thank you for that. We have another question about instruments in the past, specifically from Lieke who says: We had willow bark flutes in our childhood, were those indeed instruments that would have been around in antiquity, do you think?

Simon: Absolutely, I do, I think they probably were. I've only made a couple that worked properly and I think willow bark flutes they're famous for having a life span of about maybe two weeks, cause once they dry thoroughly they start to crack. It's interesting that willow bark flutes are often played as overtone flutes which means that they have no finger holes, but the harder you blow, you jump octaves so you get maybe three or four notes by blowing slightly harder, and if you cover the end you get another three or four notes. So you can play some remarkable tunes on them, and I'm very sure they would have had them in the past. Lara has a recording on her SoundCloud channel which is of some blowpipes being used to keep a fire going and it's a nice rhythmic feel but they could equally be used as overtone pipes and I've got a recording I made that has about seven or eight notes from just a hollow tube of elder. When I go out, if I see an object that has got a bore, that it's a hollow tube, I think wow, I could use that. I've made instruments with nettles, with a raspberry cane, bramble, elder, feathers, anything that's hollow could be played.

Matilda: Actually I remember we spoke at some point as well you mentioned playing snail shells I think?

Simon: Oh yeah, yeah, snail shells are cool. Play a snail shell with a whelk. You get a nice base, a base, no treble.

Matilda: Sounds great, we'll have to try that again, if anyone's interested try some snail shells next gardening trip. Lara, I actually have a question for you: something like music for example, it is, like someone was saying earlier, it kind of flows, it does have a processes of sorts. Sometimes soundscapes can be a little bit more abstract, I suppose is the word. How do the members of the public, non-specialists in this respect, engage with your work? Are they interested, intrigued, curious? Is there a particular difficulty or issue that you encounter through ABADIR (https://soundcloud.com/user-170792699) or your work or in general?

Lara: Well, thank you, that's a very interesting question I must say. I think, how do I judge? I should be having in place some source of tracking, how is it received, how many plays do I have, I can actually tell you. I have 710 plays in total…the problem with this thing is that it is just an archive. I have no way to know whether people are actually engaging with them, if they're downloading them, and what they're doing with them, even if they're under a creative common copyright. But the other thing, the main difficulty that I have is basically is just laziness, laziness of the people that I know have got hours and hours of soundscapes recorded everywhere, but they can't find the time to send them to me for me to upload and it's not a matter, again, of copyright, because SoundCloud is a very smart platform, you can upload retaining your full copyright. But it's just a bit of laziness and again, this concept is not very easy to get through, unless you actually listen to some of them and then you can get a glimpse of what it was. It might be really something too abstract until they actually listen to them, until they actually pay attention to these things.

Matilda: I do have to say we were playing some of the audio earlier when we were doing sound checks and there were one or two which I thought: what is that!? It's interesting to think and try and work out what it is. Yeah, that's another way of approaching it perhaps. Will the ABADIR material be available after this year, what are your plans for the material that's currently presented there?

Lara: The material that has been uploaded is going to be there at least until SoundCloud ends. Once the material is there it stays there and it's free access for everyone. Maybe what's going to happen is that the person that manages ABADIR is not going to work on it, so it is not going to be updated anymore, but the material is going to stay there. The aim is to increase the quantity and the quality of the soundscapes there and maybe [who knows] like a specific upload for one archaeological open-air museum for example, that has got a particular soundscape to the activities they perform. Then, if I cannot find a way to support the project it will just stay there forever, for everyone to listen to.

Matilda: We have a comment for Simon from Pascale Barnes, she says: Thank you both - this was very interesting and enjoyable! My question is an open one to Simon and also to anyone listening or following along who make or work with ancient musical instruments. One of the EXARC members, The Ancient Technology Centre in Dorset, would like to get in touch with instrument makers and musicians for a potential Ancient Music Festival next year or the year after. I don't have more information than this at the moment, but if anyone here is interested in doing that you can contact Pascale, who is our wonderful EXARC chair, so her email is chair@exarc.net , you can also or contact Marnie Shaw, who works for Dorset Council so marnie.shaw@dorsetcouncil.gov.uk . Potentially something you might be interested in Simon?

Simon: Well, yeah. I think I've met Anthony Whitlock, he works there I think. I met him at the Wilderness Gathering. He gave me a very nice piece of worked flint.

Matilda: Oh, lovely! Always nice to receive flint from people. I also have another question for you Simon from Rig again: I wonder if you know of any studies comparing the acoustics of locations with the instruments or the music used? I started an experiment comparing the sounds of different instruments – specifically lyres strung with different materials – in the various environments in and around the Norse longhouse at L'Anse Aux Meadows (turf walls, timber walls, and outside) to see if the acoustics might have affected reconstruction choices.

Is this something you also find?

Simon: Not with my reconstructions because I'm basing them on what the original thing was made from. I have a lyre that I'm working on, but I haven't done much with stringed instruments. But I can imagine you would appreciate a difference. If you're working with a building, say, that has turf walls, I imagine would be very absorbent and less reflective of sound. It would be very, very obvious to someone playing. I think I'd suggest looking at Huddersfield University, professor Rupert Till there has a lot of interest in the acoustics of place and has done recordings as part of the Songs of the Cave project, but also different periods such as in Malta and in some rock gongs in Africa. But it's a fascinating vein of research, isn't it?

Matilda: Actually Roeland has also just commented: I heard of a meticulously reconstructed church organ, placed in the original church. But because the church had changed over the centuries, it was then still not possible to hear how it originally sounded.

Simon: That's the problem with some of the Palaeolithic caves, rock falls and things have happened since the ice age. Often people have done some studies but because the original entrance maybe is blocked now, it changes quite a lot of effects.

Matilda: Yeah, very true, very true. For both of you, do you think it is necessary to have a more official understanding of sound or of music before starting this type of research or can anybody do it?

Simon: I think anyone can do it. As I said I was in a choir as a kid and my instrument that I turned to is violin and I play lots of other things, more or less well, but I think it's in some ways, it might be thought that say having a classical training could hamper trying to look at what we might think of as small primitive instruments from so long ago. If your frame of reference for music is more structured, organised, ways of presenting sound. Cajsa Lund, who is one of the great pioneers of music archaeology, she has championed the term 'sound making device' rather than instrument because there's no real agreed definition of what music is. In ancient Greece it included dance and poetry, in Maya society it's a similar thing, so I think maybe having a very rigid western perspective of what music is can be a problem maybe.

Lara: Yes, probably. In my point of view since I am dealing with a wider perspective rather than just focussing on the only pleasant part, no, I wouldn't say in my point of view it's needed to have a education because that's exactly the point. Sound speaks an international language. It goes beyond space and time, it goes beyond also whatever class you're in. So I would like to underline that my study is a social science study, so I'm studying contemporary society and how it relates to the visions of the past that can come to us in different formats: it can be material culture, replicas, and can also come in a sensory way, so what Simon is doing I really like it because I'm not an artist but I can appreciate art, so Simon is more 'yang' and I'm a little bit more 'yin'. I'm in the receptive mode, I am a listener, and I also make sounds, I don't make music but that's not the point. It opens up a little bit more of attention also in the sensory aspects. Of course they deal with the past, but you can also pay attention to what soundscapes we are experiencing now. For example, during the lockdown, a lot of people were sensing differently, their own towns, were paying attention to birds singing and things they didn't hear before because of the usually background noises everywhere. So I believe that in my perspective the work is a little bit more on the listener's side, it is a little bit more on the perception side.

Simon: That's really a good point. I believe it's thought that people who live in towns and cities, we have lost 20 decibels of our hearing. Not that we don't have it, but because we are so in tune with this noise of cars, motorways, planes all the time, our brains have switched off to that lower level. It will be interesting maybe to make a comparison of people who live in some little hamlet up in the mountains with people who live in the city and see if there is a difference between what they can appreciate. In the last three or four weeks there's been an online forum of marine biologists in Italy, who've been having an ongoing thing and they're looking at soundscapes from an ecological perspective, and they say that the least understood aspect of a complex ecosystem such as the ocean is the manner of communication that's in the ocean. And sound is the most efficient means in the sea. But one thing that they have noted and said the human population needs to focus on, is the need to reduce our impact of underwater noise, because it is really detrimental to the creatures that actually live there.

Lara: Yes, I think it was a study done on dolphins, how they actually could measure, record their interaction and it was a fascinating study and you know I have to mention again, Trevor (Creighton of Butser Ancient Farm), because one of the observations that he had when he played the first soundscape during the conference in Berlin, was exactly that our senses are overwhelmed and are also a little bit more focussed on the visual side. By taking away the visuals and concentrating just on the sounds, we can try and focus again on the things that we need to rediscover.

Simon: Hear, hear.

Matilda: Yeah, I think that's a good point. a quick question: what is your favourite, shall we say, result that you have encountered so far, so favourite soundscape or favourite instrumental reaction for example?

Simon: I was given a challenge as payback cause I challenged someone to learn to play an end-blown flute. As a payback I was challenged to write a poem in reaction to one of my own model instruments. So I set something to record and I improvised a tune and then I sat down immediately and wrote a poem, listening to this piece. And I was amazed at my poem actually and you have to have a wait but I'm writing a paper exactly about that, in which I discuss how, by presenting museum visitors with sound, maybe we need to have their input for exhibitions through their poetic response to exhibits and the soundscape that goes with them.

Lara: In my point of view, the soundscapes collected so far I love. I like them all, there's not one that I don't like, and they all communicate different things. What I'm looking forward to do and it's nice because I can tell Simon, I have here the first handmade flute made of elder wood in my hands, you know.

Simon: Oh!

Matilda: You can't play it or you can play it?

Lara: I can't draw any sound out of it, but Simon has given me very, very clear instructions. I'm going to try and try and try and try until I can. It was one of the things that came out after we actually chatted and you know and it's a beautiful object, I love it. So, I'm looking forward to maybe produce some sound out of it.

Matilda: That sounds great! I look forward to hearing it on ABADIR when you've perfected it Lara.

Lara: Of course, of course.

Matilda: You mentioned the visitors' interpretations, so Eus has asked: Is there known visitors', research of visitors on the effects of soundscapes on the public? Can you suggest any studies that have been done on this already?

Simon: The only one I know of is mine. Send me an email, I'll send you the paper.

Matilda: Perfect, so there you go Eus, you can get it straight from the horse's mouth so to speak. Roeland also asks: Do you notice that archaeologists, maybe just some archaeologists, when understanding sound and its importance are better able, to sort of "see" sound in their material or their research? Do you know of any examples where your work has influenced archaeologists?

Lara: Oh, I see that he added another question, it's a really good question: Would you think visually impaired people understand more of your audio, can say something other people don't, and in this way, better understand the archaeological record? Yes, absolutely, and this is one of the most important things.

But one example for people who study pottery, like me, I started being a pottery specialist. My professor used to pick up a sherd and then draw out a sound with her finger nails on it, and the higher the pitch, the better the firing. I think this is like a never ending story, you know all the things that we talk about today, especially if there's collaboration between researchers which is pretty rare actually in experimental archaeology, we tend to be like lone workers, doing our own thing, in our own little world. If we actually speak to people and collaborate with people and hear what they have to say to us I think it is like a mutual again exchange, and I would really love to see it more established.

Simon: On that idea, there was a paper given at the international study group of music archaeology, in 2008, and he was looking at bronze axes, it was a PhD he'd done and he was talking about the fact that the sounds of the axes were quite remarkable. But what he could say is possibly that the better the sound the better the quality of the bronze used. And that maybe when people were trading for bronze axes they would know this so that they would hear an axe before they traded for it to see if it was up to scratch, as it were.

Matilda: Yeah, that's interesting. I was even just thinking, I remember meeting a lady who said that you know if a water melon is good or not, is whether if you hit it, it makes a certain echo or something. So it's amazing how much sound is actually an important part of our life in that respect.

Simon: It is.

Matilda: I'm gonna have to wrap up, so thank you very much to Lara and to Simon, thank you both for joining us today.

Simon: Thank you for having us.

Matilda: And also for sharing you amazing work, it's been fantastic to be able to actually share it. The great thing with audio is you can share audio too. I definitely learned a lot, I'm sure our listeners did too. So yes, thank you very much.

Lara: Thank you very much and it was a fantastic experience. Thank you.

Simon: Yeah, thank you again.

Matilda: And thank you to everyone else who is listening to this episode of #FinallyFriday by EXARC. If you would like to become more involved with EXARC, why not become a member? Alternatively, you can make a small Paypal donation through the website to help support EXARC in its endeavours and hear about more fantastic projects like the ones you heard about today. Otherwise, see you next month for another episode of #FinallyFriday.