**00:00:04:14 - 00:00:12:22**

**B Martin**

Hello, and welcome to the Pitt Rivers Museum!

**00:00:12:24 - 00:00:14:26**

**J Dilley**

Archaeology is very much for everyone.

**00:00:14:26 - 00:00:17:00**

**B Hodgett**

There is something very poetic and artistic about archaeology as a discipline.

**00:00:17:00 - 00:00:19:14**

**J Dilley**

And that's exactly why the Stone age was so long.

**00:00:19:14 - 00:00:27:03**

**B Martin**

Your emotional connection to the makers and their struggles with their own flint knapping is really special.

**00:00:27:03 - 00:00:32:08**

**J Dilley**

This particular theory was actually coined the sexy hand axe theory.

**00:00:32:08 - 00:00:39:17**

**B Hodgett**

The past is so incredibly cool.

**00:00:39:19 - 00:00:56:08**

**J Dilley**

Apparently you haven't got enough pointy sharp things.

**00:00:56:10 - 00:01:13:06**

**B Martin**

Hello and welcome to episode 3 of Making the Pitt Rivers Museum. In this episode, we'll be speaking to Dr James Dilley from Ancient Craft, who's been helping us think about replicas and fakes in the museum from a perspective of a modern maker. James, perhaps you could introduce yourself to our listeners?

**00:01:13:08 - 00:02:15:04**

**J Dilley**

Hello. Well, I'm James. I'm from the company Ancient Craft that I set up when I was 16. I have a background in archaeology that I started way back when I was, well, even in pre-teen years. But then went through a GCSE, A-level archaeology and, did archaeology through to a PhD at Southampton. But I've always been a maker, but with, I suppose, an academic background as well. I'm often asked well you know, are you an academic? Are you an archaeologist? I generally stick more so towards a crafts person, but for my craft I work in stone tools and the Stone age and the Bronze Age, whether it be flint knapping, bronze casting, or all the crafts that are associated with it. And as a company, we work with museums like the Pitt Rivers and heritage centres, TV companies, media, books, you name it. A bit of everything. If there's something Stone Age or Bronze Age, we will often be involved somehow.

**00:02:15:04 - 00:02:29:17**

**B Martin**

Thanks, James. So I'm Becky Martin, project officer on the Making the Museum project here at The Pitt, and our listeners might now be familiar with the project researcher, Dr Beth Hoggett, who also joins us today, and who spearheaded the project's collaboration with James.

**00:02:29:19 - 00:04:37:08**

**B Hodgett**

Thanks, Becky. So this conversation evolved out of a workshop, which we called ‘Makers and fakers: how copies, casts, replicas and fakes make museum collections’ and this was a workshop which the making the museum team hosted at the Pitt Rivers in early October 2024. As part of our project's research into the makers of the Pitt Rivers Museum collection, we've discovered that a very large proportion of named makers in the museum database were often museum workers, or European and settler North American archaeologists and anthropologists who were making replicas and copies of the artifacts that they studied in order to better understand the technology behind how these artifacts were made in the past. Historically, it's really important to note that museums were spaces for experimentation. Objects were regularly copied, cast, replicated, and reproduced. And these copies were shared with at the museums for displays, even put to practical use for research purposes. Annual reports of the Pitt Rivers describe students at the museum making flint implements, spinning or weaving, and even puzzling out the scales of musical instruments. There's a now infamous anecdote that involves the censure faced by a museum curator following an incident with a thrown boomerang in the nearby University Park. But in more recent years, replicas fallen out of favour as museum objects. They're often relegated to storerooms and seen as not being quite as valuable as what we might call ‘authentic’ artifacts. But what this workshop ‘Makers and fakers’ really highlighted was not only that replicas are really important objects in museum collections, with their own stories to tell about the history of museums, and in particular, they help us think about archaeologists and anthropologists and museum workers as makers in their own right. But the presence of these objects in museum collections also teaches us that the act of making can really help us think about the past and the collections we care for, in ways that we really couldn't do without this hands-on experience. And I think that's something I'm really excited to talk to Becky and James about today.

**00:04:37:08 - 00:04:51:22**

**B Martin**

James, as one of the few people practicing flint knapping as a full-time profession in the UK today, would you maybe tell us a bit about how you got into flint knapping and what it means to you to be one of so few a number?

**00:04:51:24 - 00:08:05:20**

**J Dilley**

Yeah, I guess for my introduction to flint knapping, I, like many young people, and I guess for the age range I'm thinking about is perhaps year 3 or 4, which is important because at the moment, pre-history for year 3s and 4s is on the curriculum, I think that's age 7 and 8. And being a young child who enjoyed building things, making things, playing outside in the garden, I guess history has a lot of interesting and exciting components, whether it be battles or mummies, you name it, it's, I guess a topic that has great potential to capture the minds and interests of young people. So that combination of enjoying making things with history, I suppose, naturally pushes a young person like myself towards understanding a craft and although I've got no archaeologists in the family, my family are a pretty practical. And I can distinctly remember watching a flint knapper on television, on possibly a time team episode or similar, and like so many crafts people and with a bit of TV magic that usually shortens the sequence, they just made it look so blisteringly easy, the sort of thing any old ten year old with some old rock could master within a matter of moments, and I went straight out into the garden to find a piece of flint, which was quite easy because I'm from North Hertfordshire, which is a place as more flint than you can know what to do with, and we lived on the edge of a town where there is plenty of fields full of flint. So that wasn't a problem. And there was no Hollywood moment unfortunately, when I found my piece of flint. I hit it a few times and it didn't just happen to fall apart into a nice axe head. It really did not want to play. To say I got some flakes off it would be extremely generous, but for some reason I persisted with it. I'd seen that someone could do this and they didn't have any special equipment. They just had pebbles like I have in my hand now. So surely with perhaps a bit more effort and understanding, this is something I could do. I even then appreciate that I might not perhaps get it straight away, but perhaps with a few more taps here and a few more taps there, well, I'm perhaps seeing a little bit of progress. And with more flint from nearby fields and a few hours here after school, and during school holidays, I started to continue with flint knapping a bit more. And although I don't have any archaeologists in the family, I was very lucky that my parents signed me up to the Young Archaeologist Club, which for my local base is Cambridgeshire and they were able to help direct me towards learning more about this time period that I was starting to build a relationship with, as well as some field trips and museum trips along the way. So by watching someone watching the process being carried out by a modern craftsperson, using ancient techniques, I was captured. And it's held me up until today.

**00:08:05:20 - 00:09:10:02**

**B Hodgett**

That's a really wonderful story. And there's something really fascinating about that idea of coming from, like, a family of makers and that kind of like tactility that's kind of built into just how you as a family navigate the world. And I think that kind of maybe leads me to my next question, which is that something that always struck me about working in archaeology is that tactility of the discipline. And, you know, not only are you often the very first person in thousands of years to kind of touch an artifact as it's being excavated, as it kind of rises out of the ground, but sometimes, you know, I'm thinking of pottery in particular, you sometimes find yourself quite literally slotting your fingers into the fingerprints of someone from the ancient past. And it's this wonderful sensation where this kind of physical proximity makes the past feel so present. And there's this real moment of kind of closeness with the maker of the artifact across time. And I wanted to ask you, in relation to your work with flint knapping, if there was a kind of stand-out moment like that, but you really felt that very intimate connection with a particular past maker in your work?

**00:09:10:02 - 00:13:43:02**

**J Dilley**

I guess flint knapping is a craft that is exceedingly difficult, despite it being, well I suppose the earliest of crafts making stone tools, it is, and has been referenced many times as being one of the hardest out there that uses a natural material because it's such a challenging skill to get to grips with, and the raw material can be so inconsistent. It's not like having a piece of wood that you can almost predict its characteristics based on the species, its hardness, how it’s likely to react, how much tensile force it can withstand. Whereas flint can have fossils, faults, almost quartz geodes in it, you name it, it can have all sorts of problems. But in terms of any moments, tangible connections, I suppose, to the past, it's very rarely when I see a really stunning hand axe and you can picture that teardrop shaped, beautifully flake stone tool right in the middle of a case that has a label that says hundreds of thousands of years old. It's been made by a completely different species to us. Same genus, still homo, but it's been made hundreds of thousands of years ago when the landscape that that museum now sits in would have looked completely different. And I can see that tool and think, yes, okay, that's a cutting tool. And I've made lots of them and I've used many of them and know how they work. But actually the connection, or I find a better connection when looking at some of the waste flakes, the chunks that have been detached during that process. Because to start with a nodule of flint, to get to that nice lenticular-shaped hand axe, you have to use a pebble or a bone or an antler to take lots of flakes off to undercut pieces from the outside. And each time you hit it, you put that plane of fracture through the rock, and you can read it as you go through it. But being able to read that process and how that shock travels takes a huge amount of skill and experience. And sometimes, well, actually quite frequently, often in museum stores, because they're perhaps not quite so visually attractive, you can come across mishaps, mistakes that people have made hundreds or even just thousands of years ago. And occasionally you can pick up pieces and see exactly how they've struggled to get rid of this one chunk that sometimes they've managed, sometimes they haven't. But because I've been in that setting myself, many times, I absolutely know that frustration. I can think through my own head how they're desperately trying to turn this piece of flint over and over and work out any opportunity that they can set up an angle. And I do actually have an axe rough out that I found in North Wales last year, which I think is one of the best examples that I've found. Unfortunately, it's quite weathered on one side, but the other side it has, well, as my partner Emma Jones, who specializes in prehistoric ornamentation likes to use for her technical terminology, a knobble, for any lumps or bumps on a piece of flint, which I guess detract from it's aesthetic quality. And this axe rough out has a knobble on the top of it, and you can see where the knapper has tried to undercut the knobble at almost every angle. They've tried every single opportunity all the way round it, and they've not quite managed it, and they've discarded this rough out. And I've never come across one quite so obvious as that. But you can pick up an object like that and actually feel that emotion. It never became an axe head, but you can really sense, you can imagine the person is perhaps sat at that spot next to you as you stand there holding this thing that they discarded. They haven't just completed this object and stepped away to cut down a tree. They've gone through some intense feelings of frustration and annoyance to get to this piece of rock that you're now holding. And I suppose there is that tactile connection that we have with these stone tools, but I think trying to build that relationship based through emotion and feeling actually connects us better as humans sometimes, that we can feel that empathy across, well sometimes hundreds of thousands of years. And although it might seem like distant time, it is crafts like flint knapping that gives us those rare opportunities.

**00:13:43:02 - 00:14:19:22**

**B Martin**

That's a really lovely way of putting it James, and your connection to not just the flint as a material, but your emotional connection to the makers and their struggles with their own flint knapping is really special. I know that you're obviously bringing a huge wealth of experience to this when you look at those artifacts, and I was just wondering what, you know, when you look at these artifacts, has that taught you anything as a maker yourself? And does it help you knap flint today, when you see these knobbles and the techniques that someone has used, has it helped you to try and work out what you might do in a similar situation, for example?

**00:14:19:24 - 00:19:06:07**

**J Dilley**

Well, I think if we can work out a way of spreading the terminology of knobble that I think that I'll do an awful lot of good for breaking down some of these very, very technical terms that archaeologists use that can make it a bit inaccessible. But when you hold a piece of rock and say knobble people can immediately imagine, yeah, that's a lump. That's not just some tranchet flake or, you're not throwing in phrases like chaîne opératoire, which for most people outside archaeology, they sort of look at you blankly. And I'm definitely a person that appreciates straightforward, down-to-earth language. And I think that's a key part of prehistoric archaeology. But that's a slight side-track and a different story. I suppose, looking at a lot of original materials, as I've been lucky enough to do working with museums, my role as a career so far is often based around replicating prehistoric objects as accurately as possible, so being able to handle that material means that in my mind, as I'm making that stone tool, I'm not worrying too much about how to shape it in the sense of ‘is this accurate?’ because I almost have that catalogue in my mind that, you can sort of flick to page six or, and we go through our list of scrapers. Ah, now this museum wanted an early Neolithic scraper, so it needs to be on a, a flake that's probably come from an axe head and I'm going to flake it quite cleanly, but oh this museum wants an early Bronze Age scraper, so essentially, I just need to bash it and make it look like a load of rubbish. I guess that position that I have been able to handle a lot of that material, provides that foundation of confidence that as I'm working through the material, I know what I'm aiming for. I don't have to worry about being creative too much. I guess I'm not a particularly creative person, although I suppose my craft is quite artistic on one scale. I would say that I'm much better at copying things. I guess I'm perhaps a unintentional faker. I'm much more comfortable making a replica of something rather than just, an object purely out of nothing, I suppose, as it were out of imagination and pure creativity. So, against perhaps looking at it a different way, looking at the original material outside of the making process actually gives me the opportunity to feed back to museums or whoever has this collection at the time, to give some indication of how that tool has come to be in the state that it is, to start to pick apart its object biography. Because in theory, an axe is an axe. But actually, that axe may have gone through many stages. And if we take it further down the line, just to perhaps a humble little scraper that's just on a flake, that scraper may have been several tools before it’s in its state, as it was found. It might have been, perhaps, a knife before it was flaked down, and before then, maybe some other larger tool, maybe a broken axe head that, someone has taken up one half of the axe, taken a flake off it, and utilized that sharp material whilst they were out in the woods, because for lack of deep ploughing at the time, its much easier just to pick up a broken chunk of axe rather than start digging a hole for some flint. But trying to pick apart that story that that object has been through can be quite tricky when you just look at the finished objects and it can be very subtle, tell-tale signs, like a tiny patch of polish on the surface, or slightly unusual flaking on one side that suggests that perhaps one part of it was finely flaked, but the edge here is quite roughly flaked. That could indicate that it was the work of two different people, or that they were trying to make something quickly perhaps. They weren't so concerned about making a finely finished object. And when you just look at quite a sterile piece of stone, trying to pick out that life story can be quite tricky unless you have that experience of making those stone tools as a modern crafts person and using them. And you've asked me lots about going through that process of making stone tools, but I use them an awful lot as well, through all sorts of projects, from cutting down all the timber to build the replica Neolithic houses at Stonehenge, to making wooden sledges to carry a one tonne stone to be pulled by 30 primary school kids for a BBC documentary. That feeds back into my understanding of how those stone tools work, that I am lucky enough to then pass on that information to a museum that can then use it to interact with the public in a nice circle if you like.

**00:19:06:07 - 00:19:18:14**

**B Martin**

I love that it's, you know, as you say these things that your role as a maker reveals about these historic makers and historic processes that people who don't have that hands-on experience might miss.

**00:19:18:14 - 00:20:15:07**

**B Hodgett**

And again, I think what you're talking about in terms of the story that objects tell us and the idea that even replicas have their own biographies and their own stories is a really interesting one and I love that description of going from the, kind of the axe all the way down to the kind of scraper through the object’s life. And I think you've probably already touched on some of these queries already, but at the workshop I handed you a replica hand axe that I keep on my desk at home. And James, you were able to identify this as one that you had actually made, and I didn't know that at the time. I'd been given it as a gift. So clearly with enough experience, and you have talked a bit about how it's possible to notice these tell-tale signs of what a specific individual was trying to do, but are there any other studies? Like, can you tell things like if someone left or right handed? Is it an adult or a child who made objects like this? And what can you tell about a specific maker of a particular stone tool by working directly with these artifacts?

**00:20:15:07 - 00:27:23:22**

**J Dilley**

So that's, I guess, as a multi-part question, I will have to give a multi-part answer because it's not a straightforward thing to look at in a fairly short period of time, because I suppose we have to look at the archaeology itself, that you're holding a replica Palaeolithic hand axe, and the originals are often hundreds of thousands of years old. And although they might have been dropped and then covered over quite quickly, Palaeolithic sites are often represented in sand and gravel quarries where that, archaeology, or those stone tools and bones, have been moved around a huge amount before they've ended up locked in the gravel and discovered by, the bucket of a digger or archaeologist. So picking apart the site starts to get quite tricky, because that hand axe might be some distance away from the waste material and perhaps scattered away from other objects that might give a sense of how it fitted into the rest of that material, so that you can perhaps make that connection to other objects, to see similarities in the quality of the working. But there are examples, rare examples, in archaeology where we have, even from half a million years ago, scatters of waste flakes that have survived all that time. And a particularly good example is at Eartham Pit near Boxgrove, just near Chichester, where archaeologists were excavating a site where they found around 300 hand axes. And in one of the layers, they found a collection of flint flakes in a little scatter. And it was where someone had been re-sharpening a hand axe. Just the tip of it. Not making it from scratch. But curiously, this scatter was in an almost perfect V shape on the ground. And what they realized is that they had found the point where someone had been sat on the ground with their bottom on the ground, legs apart, and they'd been knapping, holding the hand axe out in front of them and the scatter was left in, I guess, the shadow of their legs, I suppose, that had survived for 500,000 years. But that's quite rare, sadly. We can identify that ten minutes right there for that knapper sat there and we can tell ah, well, this person is clearly fairly skilled that they can retouch this fine cutting tool. But trying to pick out individual knappers thousands of years ago starts to get quite tricky. Now, I mentioned that axe from only 5000 years ago, let alone 500,000 years ago, with all the problems that left the knobble on the top. Well, that's surrounded by a huge amount of natural debris and other broken axes and flakes and moss and other natural growths over the surface, which make it very, very difficult to pick out individuals. In quite well-preserved stone tool or lithic assemblages, sometimes you can start to see some similarities, but I guess you have to counter that that could just be social or cultural pressure to flake stone tools in a similar fashion. And although that stone tool looks very similar to that stone tool, the difference in time could be 100 years, a thousand years, and clearly those people would have never known each other. And the other problem is that people, often, even in later pre-history, moved around an awful lot and sometimes returned to sites, but after a period of time. And if the same person is passing on a similar level of skill or perhaps a method of approach, then you are going to see similar results. So, it does get quite tricky to pick apart who individual makers were in deep time. And although you can look at stone tools and start to see some similarities, I do add to the air of caution that just because two axes look quite similar, it might be because the flint naturally lends itself to being that shape. That's the easiest and most direct useful shape to make, rather than one knapper purposely making the particular shape that they like over others. And that is where it starts to get quite tricky. I can recognize some of my own work, I suppose, and I can to some extent start to recognize some of my own work at different levels of experience, when I was starting to perhaps struggle with certain areas. And interestingly, I've noticed that when I'm teaching workshops, I actually find that after maybe a couple of days or so, maybe a little longer, of teaching someone to make a hand axe, for example, they can make replica hand axes that look more like the originals than I can, whereas I struggle to make good replicas because you have to take away that natural crafting, almost perfection that you're trying to pursue to make it look nice, I have to really desperately try and focus on making a tool rather than a piece of artwork, as that was perhaps the hand axe’s original intention. Because for the one that you're holding, that's definitely down the finer end of the scale. But you see many Palaeolithic hand axes out there that have probably had ten minutes work and look pretty ugly, but they were made to cut up and dismember a carcass. They were not made to look particularly nice. They'd be used for a half an hour, maybe an hour, and then would just be thrown on the ground. There was no intention for it to stand out, I suppose, that we see more commonly later in pre-history, where we perhaps see the rise of craftspeople. But that doesn't mean that we don't see the odd Palaeolithic hand axe that looks either much larger than it perhaps should from a functional point of view, which has given rise to discussions over is this perhaps the earliest example we see of the crafts person to purposely make a cutting tool which is too large or too nice than is necessary? And particularly the hand axe from Furze Platt that is on display in the Natural History Museum [London] is about the same length as an adult thighbone if you're around six foot tall. So it's, it's quite long. Trying to use that to do any cutting would be quite challenging. Really a hand axe should perhaps be about the size of your hand maximum, whereas this is significantly longer. But this led to the suggestion that perhaps some of these hand axes were being produced as a demonstration of… reproductive reliability, if that's, if that gets it across? But hopefully you, the listener, are now sort of thinking, oh yes, I think I know what you mean, but it will become more obvious, perhaps, when I tell you that this particular theory was actually coined the sexy hand axe theory. And perhaps you're with me now, dear listener. The suggestion that being able to make an extra-large hand axe would we have been able to demonstrate your toolmaking prowess as well as other things. Perhaps the earliest evidence of compensating? Who knows!

**00:27:23:22 - 00:29:20:14**

**B Hodgett**

There's so much phenomenal richness in the way that you talk about what you can glean from makers in the past and what they might have been trying to imply by making and what they were able to do. And I think something that really struck me in that thread is this idea that obviously when these hand axes kind of sit in museum spaces, there's that kind of reification. And that kind of almost performance of ‘this is an object of great value because it sits in the museum space’. There’s this performative element to like museums and the way that they kind of show objects to us. And at the same time, I think there's also maybe an element of performance in the act of replica making. And that's, I think, what I'd like to ask you about next. Because when we first met, you were in the middle of launching a replica Bronze Age log boat into Stanwick Lakes. And there was this incredibly exciting moment where a whole team of experimental archaeologists, volunteers, and replica makers had all kind of come together for this launch. And notably pretty much everyone who was directly involved was dressed in period-accurate costumes. And on your social media too, you know, you’re often dressing in kind of historic clothing, you know, often from the sort of Bronze Age or the Neolithic. And I think this makes me think about the kind of performance of experimental archaeology replica making. And I'm curious sort of how much is that act of getting into costume about engaging the public and creating something that's really eye catching for social media, and that gets people talking and gets their interest? And how much of it is more for that internal process of trying to understand these lived and embodied experiences of past people and trying to get into that kind of headspace of people who are making things under similar conditions some thousands and thousands of years ago? And as a follow up, I guess I'm kind of curious as to whether or not you find that when you're working with flint and flint knapping, does being in period clothing or kind of doing this outside versus sort of inside, does that kind of change the way that you actually work in any discernible way?

**00:29:20:14 - 00:37:03:14**

**J Dilley**

I suppose, for me to be in a setting where my mindset is as close as possible to a prehistoric person, I would have to be in often some quite unique settings. But I don't necessarily think the clothing that I'm wearing or the surrounds, because I could sit in perhaps a replica prehistoric building of some kind, or next to a standing stone, and make a stone axe. But I think the main issue, perhaps if you were trying to replicate the scene not from a visual point of view, but from the way that my mind is working at the time, would be very difficult, because I'm making something that I guess is for a slightly different purpose than it was originally. And I always, particularly when I'm talking through the process of teaching flint knapping, is really tried to get across the, I guess, position, the focus of the mind at the time. That for these people hundreds, or even just a few thousands, of years ago, were trying to make a tool that they perhaps would then use in the next five minutes, once it had been finished, or they would then go invest 60 hours into grinding smooth to make a Neolithic axe, or they might be about to walk across to their family unit, who are cutting apart a woolly rhinoceros and sort of almost shoulder deep in visceral and other matter, shall we say, without going into it too far. And we today replicating that process, as we were doing on the workshop, are making or trying to learn, getting into the heads of these people, when I suppose they themselves were not necessarily trying to get into the heads of the people who came before, they were using that process of flint knapping, because it was their day-to-day task and activity, whereas it's not today. Our brains are quite different. They have evolved, even perhaps in the recent time to be better at using smartphones or certainly not using stone tools. And although we perhaps have echoes of the way that our body has evolved around the process of stone tools, our hands in particular being perhaps the most obvious that they are the shape that they are because of stone tools. But I suppose the closest that I can get, or anyone can get, as me or others as the makers, are perhaps those very, very specific snapshots. Perhaps that, again going back to that discussion on emotion and feeling when you work through a piece of flint and that you perhaps have a problem or you're trying to work towards something and you're absolutely fully focused, building up the edges and the platforms, planning ahead like a complicated game of chess. Flint knapping has quite a set fracture mechanic. You can't just hit randomly, and each hit often has to be perfectly accurate as well. So, whether it's conscious or subconscious, you're going through a whole set of processes that you're building up towards the finished product. So, you have a rough idea of what it might look like in your mind, exactly as people did in prehistory. And within that build up, as you're thinking carefully through it, there will be short moments when that connection, if you were to scan someone's brain at that moment, would probably be very, very similar to that of a prehistoric person, because at that moment you're fully concentrated, you're not worrying about what you're wearing, whether you're in a modern building or not, whether you're making it to be a replica that's going to go on display, or to go out to butcher a woolly rhino or similar, you're there to detach that flake in the way that you want it to. And perhaps that's one of the few connections that you can achieve these days, unfortunately. Although I feel connection sometimes to these people through that, perhaps recognizing that frustration, I actually feel a great deal of disconnect as well, sadly, because I'm fully accepting that the reason that I'm flint knapping is to provide education and entertainment for museum visitors. I'm not making these tools very often at all to walk across the workshop and start to butcher something. I have a very different process. But I suppose to look at it on the other side of your question for the reason why it might be useful for engaging with the public to perhaps give it more of a positive view on it. I think both the crafts and processes in archaeology are tied very closely to visual representation that people can engage with, whether it be doomscrolling on social media, these days people are very driven by what leaps out at them immediately. And again, dear listener, just imagine as you're flicking through your smartphone and seeing a cute animal doing something funny or someone doing some amazing act in a sports match of some kind, those things stand out to us, and archaeology has an awful lot to offer. That might not be someone scoring a perfect goal or something similar, but there are so many visually striking things, that could be someone breaking a rock in an unexpected way. Because today we, we don't see people breaking rocks in such a way, or might be someone taking another rock, but a green rock and putting it in a fire and this liquid metal comes out. There are so many visual points that, can really show how, I guess, intense archaeology can be and setting the scene for visitors at Stanwick Lakes for when we had the boat launch was all about, I suppose that theatre, building the setting that within the lake space, if you ignore the visitor centre for a moment, it's just a body of water with reeds and animals flying and swimming around exactly as they would have in pre-history. And then after a moment, they see this wooden craft gently gliding across the water with people wearing stinging nettle fibre tunics or leather or other animal skins, using wooden paddles to propel themselves across the water. And just for a moment, if you can blank out some of the modern noises in the background, you're seeing a scene from perhaps 3 or 4 thousand years ago. And it's finding those opportunities within museums or with crafts people or experimental archaeology that are our opportunities to actually grab people. That means that our static stone tool that just sits there and it looks nice day after day and occasionally people walk past and read the label and see that it's a couple of hundred thousand years old. By going through those processes of setting the scene, perhaps building that Bronze Age boat we are bringing back life to those objects which have become cold and distant after thousands of years. We need to perhaps bring that warmth, that excitement back to them so that people can feel that element of understanding with them. Because I saw those people go out on that lake, and I saw them using bronze axes to cut that wood, and wasn't it effective? I thought bronze was a soft metal, but they cut through that in a short amount of time. Or I saw someone making one of those stone axes on TV. They look as if they would take hours to make. But he did it in ten minutes. I never knew that. And those capture points, I guess, if we could bottle it, is exactly the way that museums and archaeology can drive to, engage and bring wider audiences in.

**00:37:03:14 - 00:38:38:00**

**B Hodgett**

You speak so beautifully about that allure of archaeology. I think there is something very poetic and artistic about archaeology as a discipline that always really grabs my imagination and it's those, it’s storytelling, I suppose. You know, archaeology is about telling stories and I think that really resonates for a lot of people in very different ways. And I'm kind of curious now to kind of take this theme that you're talking about, of this kind of a tension between feeling connection and also feeling distance from people in the very, very far past, and think about connections to people in the more recent past. And there's a very long history of flint knapping as an experimental research tool in archaeology. You know pretty much from the moment that hand axes were kind of discovered in the Somme gravels in the 1830s, antiquarians were trying to understand if these objects might have been made by humans, and if so, trying to work out how that would have been possible. And a lot of these early antiquarians, as I'm sure you know, ended up turning to people who were practicing Flint nothing as part of contemporary manufacturing industries like the gun flint knappers at Brandon, and they were trying to do this in order to understand what might have been possible for early humans to produce. So I'm wondering, James, if perhaps you might reflect a little bit on what it's like to kind of be part of this kind of long line of flint knappers that your practice descends from? And what's kind of changed in our understanding of flint knapping in the last 200 years? So, from these kind of very first antiquarian experiments to the kind of present and how you kind of see that shifting over time?

**00:38:38:00 - 00:46:16:21**

**J Dilley**

It's a good area to think about and discuss, because, as you said, it comes from a long line of craftspeople and researchers that are trying to look back at a time that we have very little in the way of tangible connection to. And for those people who made those hand axes, and I suppose just to bring in a brief timeline, just so we were all sort of on the same page, that for the earliest hand axes and these butchery tools that were made around 2 million years ago by homo erectus, and they continued right through until about 300,000 years ago when Neanderthals moved on to a different tool, technology. So we're talking about very distant time. So for those early antiquarians who were battling with new thinking about the world, that it might not be just a few thousand years old. That actually there is deep time evidence of humans that lived not, thousands but hundreds of thousands of years ago. So they had to pioneer that understanding of these people who made and left these objects from that distant time, like the hand axe. So I guess the journey of flint knapping from a modern sense of learning had to start somewhere. And that's quite a natural starting point. How were these objects made? And as time progressed, as we went from the early 19th century and even some 18th century archaeologists and antiquarians, we move from how these things were made into what these things were made for. So to actually understand how they fitted into the daily lives of these people in the Palaeolithic. And that's perhaps where things start to get a bit trickier. But as, antiquarianism, just finding and collecting things to put in cabinets, changes into early archaeology, to start to look through sites carefully and strip back the soil bit by bit to understand where these objects were found and how they might be connected to each other. There's now that footing, that foundation that we can start to look at how these objects might have been used, and early experimental archaeology starts to appear at that point. And for examples like Boxgrove that I mentioned earlier near Chichester, that's where we start to see experimentation when archaeologists who have some experience flint knapping start to actually test their tools to replicate that V shape scatter. Is that a case of where someone sat down on the ground? Were they kneeling? But that that's, I suppose, for quite not behind closed doors because it was published as a report that you can find online, but that was intended for the, I guess, progression of archaeological understanding. It was not necessarily for anyone else immediately. And there is I suppose, a bit of a jump between those earliest antiquarians and those archaeologists, or the very end of the last century. And in between them we have our forgers, who were making flint tools to fill curiosity cabinets, as I mentioned, but there was perhaps less interest in understanding how those objects were used in that time. It was all about collecting, and with varying levels of information that were kept with them. It does always amuse me when you come across early descriptions of these stone tools, particularly hand axes, when they describe them, as being pointed with sharp edges and of a rude size, the sort of fantastic language or vocabulary that they had back in the day. But once we perhaps move into more of archaeological understanding to make these stone tools, then we do start to get narrowed down, refine the question, instead of how were these things made? How was this specific type of object used at that site? And now that we move further forward into almost the present day, it becomes even more narrow. How can this particular research question be supported by this very, very narrow piece of experimental archaeology? How does this particular type of axe fit into our understanding of the research question which might be something like understanding polished Neolithic axes in the British Isles and that that's even that's too open. But it might be, the question might be based on comparing the different stone materials, different lithic materials. So making some replica axes and testing them to destruction to see how they compare. So the focus has become less the experiment and more how the experiment can fit into the question as a larger approach. But that comes at a time, I suppose, that the focus shifts a little bit to actually start to engage with the public a bit more, to actually use processes like flint knapping as a tool to engage. And for my timeline, where I fit in, it is about there that we see for flint knappers starting to appear on television or through museum galleries, for one in particular that I was in recently that will remain nameless that had a film of flint knapping that must be over 20 years old now. And, I can guess who I think the flint knapper is, but they’re… at the time they would have been perhaps the only one at the time, or maybe one of only a handful. And they were showing the process of flint knapping, but holding the flint with one of those sort of bar towels, one of those narrow towels which it often has some alcoholic beverage, and just holding the flint knapping it and at the time that would have been perfectly fine. But whereas today, for usually new exhibitions that have a film showing flint knapping or similar, it's very, very carefully, not necessarily scripted but the scene is dressed, I suppose that you would, if you were going to hold the flint, you'd hold it with a piece of leather, and you perhaps wear some authentic clothing rather than just be in your jeans with a beer towel or similar. But you can see that progression that rather than using flint knapping in the modern day for answering questions, although it is quite frequently, it's now used, I would say far more so for engaging with the public, and where in the past that was based on using physical objects, the product of those early knappers who made a hand axe, and this is how you make it. Now it's about capturing that process through a video camera or audio that the product becomes less important than the process and visualizing the process. There must be a wide number of museums that I guess if you counted the amount of times that hand axe has been made that I've made in a film might be many more times than I've ever made hand axes, because that video has been on loop for, almost every day the museum's open. You start to sort of break down the numbers in your head to think, well, this is perhaps the first time that hand axes as a discussion point and interest, or even actually making them, has been as popular as it ever has been because our population is now much, much, much greater than it is in the Palaeolithic. So it's possible that, although the numbers of hand axes might not be the same, our interactions with hand axes are much, much greater by many multiples than they ever have been.

**00:46:16:21 - 00:48:21:00**

**B Hodgett**

That in of itself is a mind blowing fact. And I, I think something that was really wonderful to hear you talk about just then is this kind of sense of the progression of the kinds of questions that archaeologists and antiquarians are asking of these objects over time and how that relates to the practical experimentation that goes on in, in terms of how people are trying to replicate these ancient crafts. And certainly thinking about the Pitt Rivers collection, we definitely have examples here from across you know from the early 1800s, all the way into, the kind of like late 1960s, of experimental tools being used. And again you sort of touched on this very briefly, we do also have examples of forgeries, as well as experimental replica tools in the Pitt Rivers. And I think it's quite important to distinguish between forgeries and replicas, despite the fact that both of them often sit quite close to each other in museum collections. You know, as objects, they have quite different stories to tell, and they serve quite different purposes. But the thing that always kind of strikes me is that if we were to put, say, a replica that you had made very recently next to a replica or a forgery made, and I'm thinking of someone like Flint Jack who was operating in, again, the kind of early 1850s, 1860s. And if we put that again next to a genuine hand axe from very ancient times, someone who wasn't an expert might find it very hard to kind of see any difference between those three objects as they were displayed in the museum. And so I think my question then kind of becomes, how would you differentiate between a genuine artifact and a recent copy? And then secondly, if you could talk a bit about how the process of making a replica is very different to making a forgery and sort of how do you kind of frame your work so that people are clear what it is that you're trying to do, that you're making replicas and how that distinguishes from, you often see sort of forgeries being sold online as genuine artifacts and how you kind of navigate that territory?

**00:48:21:00 - 00:54:44:01**

**J Dilley**

So I suppose, for those earliest reproduction flint knappers, whether they be fakers, forgers or for the processes of archaeological learning, they hadn't yet necessarily understood the subtle ins and outs of how to make a good replica. And I talked about this a little bit earlier, about how I struggled to make a good replica in the sense that I can over-engineer. And actually, when I'm teaching people on workshops, when they have that limited experience, when they're not so worried about perfection, and they almost have a bit of a reckless abandon, they can make something that has the authentic mistakes, I suppose. Whereas what you often see with early reproductions is where they're using tools that they wouldn't have used in the Palaeolithic, for example, often using steel hammers as those gun flint knappers would have once done. And they leave quite a distinctive marker. And I suppose looking at Edward Simpson or Flint Jack's work, a lot of his flint work is shaped and trimmed around the outside to create a shape rather than an object, a whole object across the whole surface that looks authentic. Whereas as time progresses from those early reproduction flint knappers to where we are today, the level of reproduction quality has improved. They've become closer and closer and closer to the real thing when we become interested and focused on making them as accurate as physically possible, not just looking at the shape, not just looking at what the surface flaking, the scars look like, but actually looking at the tiny micro fractures along the edge to try and make them as close as possible so that they look like originals and therefore would work like originals if we were doing some experimental archaeology. Because if I was to hold a piece of flint and roughly trim it around the outside with a steel hammer, it would have a very, very different cutting edge to one that I had made with a focus of authenticity, with stone hammers and antler hammers. I was making something to cut. I was making a tool rather than our early forger who was making something perhaps to deceive collectors, which is something quite different. It had a different purpose. Yeah. And it to, I guess, to mitigate my work being sold as original. I could use something like, plenty of knappers, particularly in Europe, uses a little diamond disc cutter on a multi-tool to put little marks or initials on the bottom of a tool, but you could quite easily just flake it again and undercut that surface and remove those cut marks, or just take off that entire chunk from that corner, and then that modern mark would be lost, if you were so inclined. I have seen some of my work that's sold as originals online, both on, sort of bidding websites and actual established auction houses of antiquities, which, you know, when you go into the ethics behind the selling of antiquities it’s a whole different podcast. But I was drawn to seeing this after being informed that there was possibly some of my work been sold. And yet, quite clearly it wasn't just I recognize that, I actually recognize the particular kind of flint, which was perhaps the really easy opportunity for me to get in touch and say, well, this particular flint comes from this quarry. Here is a picture of me holding flint from this quarry. I'm absolutely certain that this is something I've made at some point. Could you ask the seller if they have any information behind it? But I believe they will have very little. And lo and behold, they had no information and started to look very suspicious and it was removed. I was almost tempted to ask if it could be confiscated, so that I could have it as a sort of example of this was being sold as an original. But I suppose I should take pride in, in the sense that, my work was deemed good enough to fool even these experts at this antiquities auction house. But how to prevent your work being sold as originals is very, very hard. And actually, Victorian and later forgers really struggled with trying to make their work look authentic, because I think there was some realization that although they could get away with trimming the edges to fool many, fresh flint looks and feels like fresh flint. And if you compare it to one that's thousands and thousands of years old, it feels worn. It's got a sort of smooth, glassy, worn texture to it, and it often has some surface patina. So they would try all sorts of things from abrading the surfaces, putting them in barrels with stones and sand, and putting them in buckets with rusty nails and boiling it in water so that the iron would try and stain the surfaces. There was all sorts of things they tried. And I suppose someone could do that today. But actually there are tell-tale signs, and most modern knappers can recognize particular features that give away attempted fakes over actual originals. It's very, very, I would say almost impossible without, I would imagine, extremely expensive, well-designed equipment that would sandblast and stain, and I would imagine the cost involved would make it completely unviable. But, I guess interesting to think about that. In theory, it could be done, but in theory, and I guess it keeps the wolf from the door in that it would be just too expensive to do in the first place. But I would imagine most, these days, most heritage personnel, unless it is a very unlikely scenario which can happen, would be able to tell a replica that's being offered up as an original, just particularly for those sharp surfaces rather than anything that's been too polished like an original.

**00:54:44:01 - 00:55:33:04**

**B Martin**

I know you, so you spoke a little bit at the workshop, James, about, you know, seeing your work on display in museums when you've sometimes been commissioned to produce something for a museum, and in some cases they might be reluctant to put that it's a replica next to it because they want people to have that sort of sense of, of wonder and I guess connection to deep time, even though they are using your work to, to do that. And obviously there's you know whole ethical questions there around accreditation for you as the maker. But given, you know, those difficulties in telling apart for the, for the non-initiated, particularly, for the visitor of the museum, telling apart different hand axes by different makers, what do you think the role for replica flint tools is in museums going forwards and kind of for modern flint knapping more generally in the museum sphere?

00:55:33:04 - 01:01:57:15

Unknown

So, I think there's a huge amount of value in flint knapping from a research point of view because, although many universities, for example, that perhaps have a pre-history module often will have someone in the department that might have had a go at flint knapping a few times and can make some fairly basic stone tools. And perhaps 1 or 2 universities have a member of staff that perhaps are a bit more experienced. But when there's either some student research or PhD research, or even some departmental research that's based around more complicated stone tools or of a higher quality, that's one example of where professional flint knapper becomes useful because they will have the skill to execute making one of those more refined or difficult to produce stone tools. But they'll often have a huge amount of knowledge and experience in sourcing the right material. And they will almost always be able to offer insights for this particular bit of research that you will often not be able to find anywhere else, because they have worked with that particular material. As an example, it might be a flint type from Kent, let's say that is very glassy, and as they've had a go at going through the process of replicating, they found that it's quite good for making a particular type of tool, but not very good for another type of tool because it's a bit too brittle, too glassy. And that's the problem that they were experiencing in pre-history. And we can see that because those tools are breaking in a particular way, those specific questions and answers might not have been answered in any other way than a very experienced flint knapper being able to go through that process and identify it for themselves and the researchers. But for other uses of modern flint knapping as a flint knapper rather than the actual product, the tools, we’ll get onto that in a moment. To work with perhaps undergraduate students. It offers them the opportunity to experience not just flint knapping, but any other crafts you could put in front of them that broadens their mind and thinking to perhaps appreciating these ancient craftspeople in a different way with more appreciation of their skill. And perhaps can think, slightly more laterally about how it might end up in the archaeological record. But as I've gone back to a couple of times, if you just take a stone axe and put it on a table, there's only so much that you can say about it with even a hint of certainty. But once you start to actually appreciate the process of how it was made and used, then there is an awful lot more that you can say about it with some level of certainty. And that can only come through the process of trying and having a go. And talking about having a go, flint knapping as a process is very, very useful for engaging perhaps members of the public. I'm someone who always tries to promote that archaeology is very much for everyone, whether you be a researcher who doesn't like to interact with the public, that's absolutely fine. That's totally up to you. You probably do some very good research. I'm someone who likes to interact with the public, whether it be in person or through a screen or similar, because I see things like flint knapping or other crafts as an opportunity, a vehicle to engage and using terminology and ways of talking about processes that are exciting and interesting, using those mind-bending things about, you know, numbers of hand axes being made are greater today than they were in the past. It it's those nuggets, I suppose, that make people think. And a colleague pointed out to me that pre-history is about making conversation. It's an opportunity to get people talking about their thoughts on the process. And it's very true that trying to find opportunities to get people thinking and talking is particularly key for archaeology. It's, I suppose, naturally a science that can be quite closed if allowed to continue unchecked. That actually really making a push towards making it as open and accessible as possible is particularly key, and it can be something as simple as someone sat there breaking apart a rock. I mean, you wouldn't believe that people these days, with the wonderful technology we have around us that can give us virtual realities and you name it, will quite happily stand there and watch someone breaking a rock, in the same way that people will happily stand and watch someone chopping wood. The most mundane of tasks that have been going on for thousands of years. Just go to show that they can capture people. And that's exactly where I see flint knapping today, is that it is most powerful as an engagement tool in person or virtually. For the actual products, the objects, those replicas that you discussed in a case, they are useful alongside originals, because sometimes those originals are degraded. They look nothing like they once did for the people that made them and used them. They would never have seen or imagined that they might have looked like that after thousands of years. So in many cases, it's an opportunity to see the object as it once was, as sharp as it once was, perhaps with a light behind it, so you can see how thin and sharp the edges are. Or for a bronze sword or axe, how the bronze blade was fitted into its wooden handle, how much it shines and gleams instead of this sort of green, attractive but green oxidized, object that we have in the case alongside it. Reconstructing the past and adding life to that object is not just based around having a replica, it's about showing how that object was made, what it feels like, how heavy it is, and it's only through accurately replicating those objects that you can achieve those sensory objectives that museums have today. 3D printing is wonderful, but there's only just a handful of those sensory opportunities that you can through printing plastic, as it's a completely different object and weight and all the other features that make stone tools wonderful.

**01:01:57:15 - 01:02:44:24**

**B Martin**

I think that's a really cool way to kind of finish off and I will ask you one last question. Kind of bringing together those two elements about, you know, objects in museum cases, but also archaeology as a tool for engaging people and having people look more closely at these objects and think and feel and, you know, get excited about archaeology. So I guess if there were one thing, imagining there’s somebody standing in front of a museum case, which has got some hand axes or some, some scrapers, some daggers in it, you know, if maybe they're not very well explained, maybe it’s in a case like it would be in the Pitt with a lot of other objects, all at the same time, what would you want that person standing in front of that case to know or to be thinking about? What would that prompt be for them?

**01:02:44:24 - 01:04:38:24**

**J Dilley**

Oh, which to pick? Oh, you’ve not, you’ve given me a tough one. Out of all the questions so far, perhaps the shortest question is perhaps the trickiest, because there are so many punchy grab points that I've sort of had to think about over the years. But okay, let's suppose if we've got our hand axe as one, or I think I might go for two, but we've got we've got our hand axe as our cutting tool. I'll go back to what I said earlier that you see this lovely teardrop shaped thing flaked all the way round, and, I'll often ask members of the public at events, how long do you think it would take me to make one of these? And you'll get hands going up and people saying hours, days, weeks. And it gives me the opportunity to say something like, well, I hope you brought your camping equipment because you'll be here for the duration, or say something witty like ‘and that's exactly why the Stone age was so long’. But no, actually, for most hand axes, they were produced in less than ten minutes, sometimes just over ten, 15 minutes or so. But usually not, not much longer. Some of them were just minutes. But I suppose the other punchy thing that I quite like to get across is that, I'll have in front of me in one hand a hand axe from the Lower Palaeolithic, and in my other hand a Neolithic axe head. Not polished, just a flaked axe head without its wooden handle. And I can hold these two objects that look pretty similar, made in exactly the same way. And we'll say in my right hand, the Palaeolithic hand axe comes from pretty much the start of our timeline, at the start of the Stone age, and the other, the Neolithic axe comes from the end of the Stone age. We are closer to that Neolithic axe head than that Neolithic axe head is to the Palaeolithic axe head by perhaps 100 times, but they're both from the Stone age.

**01:04:38:24 - 01:04:39:04**

**B Hodgett**

Staggering.

**01:04:39:04 - 01:04:52:16**

**B Martin**

Those are some very good bits of wisdom. Yeah, that's two really good points I think there to finish on. So I guess, all that remains is for us to say thank you for joining us.

**01:04:52:16 - 01:04:58:22**

**B Hodgett**

Genuinely, James, it's been such a delight working with you both, for the workshop and for this. And we really, really appreciate it.

**01:04:58:22 - 01:05:27:24**

**J Dilley**

Yeah, it's been great. It's nice to perhaps talk about how these objects and processes can be used, but I think it's quite obvious that we've seen at events and talking to the public just how excited people of all ages and backgrounds get, and certainly through that boat build project, the engagement we had from people from all sorts of backgrounds and from all around the world, just shows that archaeology and pre-history can connect with everyone.

**01:05:27:24 - 01:06:14:06**

**B Martin**

I mean, I know I'm hooked already, and on that last wonderful sentiment, we'll finish there. A massive thank you again to you, James, and also to you, our listeners, for joining us as we lift the veil on behind-the-scenes research at the Pitt Rivers Museum. Those of you who have tuned in before might remember that we have a somewhat sporadic posting schedule, all part of the excitement here at the museum, dictated in part by when we collaborate with exciting researchers and practitioners like James. If you're new to the podcast and you want to hear more, I highly recommend clicking subscribe or follow wherever you get your podcasts to be notified as soon as we have a new episode out. Join us next time to hear from Ariana Tikao and a Māori musician whose been working with, and even playing, some of the instruments in our collection, possibly for the first time in 150 years. Until next time, we've been making the museum.