But Why: A Podcast for Curious Kids

How Do You Make Paint?
June 10, 2016

[00:00:00] Tell your parents now that you need this rock. Is going to do something cool with it. And it's worth it.

[00:00:26] [Jane] I’m Jane Lindholm and this is But Why? A Podcast for Curious Lids from Vermont Public Radio. Every episode we take a question from you, our listeners, and we help find cool people to offer an answer for what's on your mind. [00:00:42] You can find all the instructions at butwhykids.org for how to record a question with an adult's help on a smartphone. We are getting some really incredible questions so keep them coming.

Before we get started today, we're excited to announce a new sponsor. This episode of But Why? is supported by Seventh Generation asking “But why?”[00:01:03] for over 27 years. Why don't cleaning products have to list their ingredients on the label? Why are so many laundry detergents such crazy colors? Seventh Generation encourages kids of all ages to keep asking why. Learn more at seventhgeneration.com. OK, let's get to the show and hear today's questions.

[00:01:27] [Addison] My name is Addison Bee. I am five years old and I live in Edmonds, Washington and I want to know about how we make paints.

[00:01:39] [Jane] There are a lot of different ways that paint is made. If you're painting your house, you're probably using industrial paint that was made in a very big factory. There are lots of chemicals involved in making the kinds of paints we use for things like houses or cars or things that need to be resistant to rain and dirt and kids drawing on the walls. There are also paints used in art projects. Some of these paints are also made in big factories but you can make your own paint with just a few household supplies. A lot of the recipes you find might include food coloring as one of the ingredients you need. Well, that's kind of cheating if you really want to make your own paint because that's already a blended up pigment, the thing that makes paint whatever color it is. So we thought we'd ask a guy, who makes his own paint from scratch, for a lesson in how you can make your own paint from start to finish.

[Nick] My name is Nick Neddo.

[Jane] Nick is an artist in Vermont. At his home studio he has all kinds of supplies for making art, and he makes most of them, so his paint brushes might be wood from a local tree for the handle and the hair of a deer for the
brush. His process for making paint is pretty cool. Let's hear Addison's question one more time before we hear from Nick.

[Addison] I want to know about how we make paints.

[00:02:54] [Nick] Cool question! People have been making paint for thousands of years from various sources of pigment. Pigment is the thing that makes paint colorful. It's the little particulate that gives paint its color. And, basically, you can break it down into getting your pigments from rocks or from plants and, you know, funguses even. So I'm really interested in using rocks to make paint.

[00:03:23] [Jane] You heard him right! He uses rocks to make paint. Sounds kind of strange, but when you think about it, rocks have a lot of different colors and if you grind them up into dust and then add water and something kind of sticky you've got a primitive paint. Here's how Nick does it.

[00:03:41] [Nick] Here I've got a collection of rocks from my recent travels. These ones are kind of special, actually. These ones are from Ireland. I've got some white rocks that are basically chalk. I've got some kind of rusty orange rocks. I have some bluish green rocks which are actually very special because blues and greens are really hard to come by in the mineral world. I have some kind of burgundy maroon colored stones, even a black kind of muddy, muddy blackstone and then a really special green which is some kind of marbly green, light green. I want to make a pigment with the bluish green rocks. I'm going to gather them up and put them into my granite mortar and pestle. I'm going to put one or two in and then I'm going to start smashing them. So a mortar and pestle is, basically, imagine a bowl, a stone bowl…. that's the mortar, and the pestle is a little handle thing, it's almost like a little hammer stone, that I'm going to use to smash my little stone in that granite bowl. So here it is. (sound of hitting rock) First thing I do is I smash that rock into a bunch of little, smaller rocks and then I'm going to start grinding it. (sound of grinding) [00:04:59] So I'm going to do that as long as it takes to get a nice powder. Right now, we're looking at kind of a light greenish blue. It's almost like a pastel-y green color. [00:05:17] That's a really nice rustic pigment as it is. And we could use it as a pretty fun paint. I'm going to get a jar (any old jar works, it's nice if it has a lid) and now I'm going to carefully pour my pigments into that jar. I don't want to spill any of it because it's pretty precious stuff. The next step is to add a little bit of water to it. I have water in another jar and I just want to use enough water, just enough to cover the pigment. I don't want to put too much water in, just a little bit. (sound of liquid pouring) And now the next step is to put the lid back on and I'm going to shake this up really vigorously. (sound of liquid sloshing) And now what's happening, as I've stopped shaking this, immediately the larger of those pigment particles… the heavier ones… those are settling down to the bottom
of the jar first. All the fluid that's still kind of floating around with pigment, I'm going to pour that into a different jar to save it. (sound of liquid pouring)
[00:06:25] And then from there, you've got a nice pigment and you can add another ingredient which is your binder. The job of the binder is to keep the pigments suspended in the solution as you're, you know, you're mixing it with water, that's your solution, and you need a binder to keep those little particles floating in there rather than just having them all settle to the bottom. [00:06:46] So the binders can be egg, they can be glue, [00:06:50] they can be honey, they can be a wide variety of things; oil, if you want to make oil paint, your binder would be some kind of oil. So it can be as simple as that. It can really be as simple as spitting in it and saliva happens to be a wonderful binder. It's kind of perfect, actually. It's got the right kind of enzyme cocktail and the right consistency. It just happens to work wonderfully. That's definitely something that people have been doing for a long time. For this particular batch of paint, I'm going to use egg. [00:07:28] It'll basically be an egg tempera paint; and you can use the white of the egg but it gets kind of goobery or snotty, if you will. So I really enjoy using the yoke much, much more. So when I just crack open the egg (sound of tapping the egg), I get a bowl and I crack it on and I open the egg and I'm going to just kind of carefully pour the egg back and forth, from one half to the other, and let the egg white kind of drip away. Now I'm going to pour the egg yolk contents out into the jar of pigment. Now the trick is just to mix them all together. [00:08:18] And then I'll work with it and see if I like it and, if it's too thin, I'll add some more pigment and, if it's too thick, then maybe I'll put in another egg. It's ready to work with! [00:08:30] So get yourself a piece of paper or some other surface to paint on and give it a go.

[00:08:36] [Jane] Nick says one of the cool things about making paint from rocks is that you never quite know what color you're going to get until you actually start painting.

[00:08:46] [Nick] Have fun with this. Go out and find rocks that look interesting to you or look cool. See if you can smash them. See if you can grind them into a powder. Some rocks are going to be really hard to do this, maybe not worth your effort. And then you're going to find some rocks that you could basically draw with them like their a piece of chalk and those ones are going to be really friendly, they're very easy to make paint with, so you get to do this really cool scavenger hunt when you're trying to make paint. The disclaimer is you're going to start bringing rocks home and if you already thought rocks are pretty and yet other reasons for collecting them, this is just going to make that worse. Tell your parents now that you need this rock. You're going to do something cool with it and it's worth it.

[00:09:32] [Jane] So there you go, a lesson in how to make your own paint from rocks. Now that you have some tips, what kind of art will you make?
Nick Neddo makes a lot of other art materials too, not just paint. While we were in his studio, he showed us a few other things he’s made over the years.

[00:09:51] [Nick] These are a collection of pens that I've made from various woods. Bamboo is a really nice material for making pens. Turkey feathers or swan or goose feathers make really wonderful pens. Let's see, one of my favorite things to work with is charcoal. And charcoal is an ancient pigment, an ancient black pigment. People have been making artwork and drawings with charcoal for thousands and thousands of years. And these are willow twigs and grape vine twigs that have charred into a really nice charcoal drawing sticks. (sound of charcoal rubbing a surface) Then there's crayons. You can make crayons from beeswax and you can use the same pigments that we are processing for paint and we can mix them with beeswax to make crayons. (sound of crayons on surface) [00:10:52] Then there's paint brushes. Paint brushes are really fun to work with, fun to make. I've got a roll of paint brushes here....some of my wild crafted paint brushes. Some here are goat’s fur that one of my pet goats donated to me. Then there's horse hair, a nice material for making paint brushes. This one here is actually bear fur from a bear...unfortunately, a young bear that had been shot by a beekeeper because the bear was getting into the hives and my mom, knowing what kind of person I am, she salvaged the hide for me and I got a piece of a little bit of that fur from the hide and used it for a few paint brushes and worked on a nice painting of a bear with this paint brush. Then, of course, deer fur. You can just find deer fur in the woods, often times where they're bedding down or, of course, occasionally you'll come across a road kill deer or you might hunt deer and you can definitely make paintbrushes with their fur, too.

[00:11:58] [Jane] Once he's got his materials, Nick thinks about where they came from [00:12:02] when he makes his paintings and drawings.

[Nick] I really like to honor those creatures or those things or those places that provided me with the raw material to make my tools and feature them in my compositions. There's a painting I did with ink I made from acorns from red oak trees and so, you know, I've done a lot of paintings and drawings with that red oak ink, the acorn ink, of red oak trees. There's a painting I did of a coyote in the Grand Tetons and I used a paint brush that I made with the fur of a coyote that I'd found. It was a road kill coyote, unfortunately. I'm working right now on a painting of a coconut palm tree from my travels in the Caribbean. I made the ink while I was there from the shells of charred coconut and made a really nice black ink and so I'm using that ink to draw and paint the coconut tree. It goes on and on... using pens from turkey feathers and drawing turkeys with them. I don't do that with all of my work, but the first few pieces that I do with a new material, I really like to take the time to honor the source of that material.
[00:13:19] [Jane] If you want to see some of the cool materials and artwork that Nick Neddo makes, you can find pictures and videos on the But Why? Facebook page and at our website: www.butwhykids.org.

Have you ever made a painting for someone that they put right up on the refrigerator or in a frame? Maybe they've even said “This is priceless.”. Well, what does that actually mean? Art is a creative outlet but it's also big business. And if you go to an art museum you might see paintings and sculptures that are worth millions of dollars. But why? Why is some artwork considered so valuable even if you don't think it's very good? And how can other artwork be priceless even if you could never sell it at a big gallery? At the Isabella Stewart Gardner Museum in Boston, they list how much each painting cost when it was bought a hundred or more years ago, by the founder Isabella Stewart Gardner, and how much that would be worth today. So we went to the museum to think about how that kind of value determination is made.

[00:14:36] [Michelle] I'm Michelle Grohe and I'm the Assistant Curator of Education and School Programs here at the Isabella Stewart Gardner Museum in Boston, Massachusetts.

[Jane] And we're standing in front of a very colorful, very bright painting.

[Michelle] This is “The Tragedy of Lucretia” by the Italian painter known as Botticelli and it's a very interesting vibrant painting, as you said, very dynamic, has a lot of action taking place.

[Jane] And this looks like it was painted more than 500 years ago. So we're looking back in time here.

[Michelle] Right.

[Jane] So Michelle, it's very cool that you can come here and see this painting and get right up close to it and look at the action and think about what's happening and look at the pigments and the paint and how it was all created. But when it comes to talking about value, something that art collectors and museums often discuss is how much a painting like this is worth. 00:15:33] And that's a curious thing because you can, in some ways, feel like it's worth nothing. And in other ways it's priceless because it's a beautiful piece of work and it's valuable to somebody so… how is art valued?

[00:15:44] [Michelle] It really depends on who is answering that question. So for some, it's about the subject matter or the content or in this case the story that's being told. For others, it might be the artist. For connoisseurs or collectors, often it might be collecting a piece from a certain time period from
an artist's career or it could be something that might be a little unusual. [With Botticelli, for instance]…..some of his famous paintings are made with tempera paint and here's something with oil, but also really liking something from a certain time period.

[Jane] For a painter like Botticelli, who is very well known, [00:16:20] his artwork takes on more value than lesser known artists. It's bought by collectors in galleries and museums. Interestingly, the Isabella Stewart Gardner Museum does not buy or sell paintings anymore. It includes only the work that Mrs. Gardner selected for the museum. So it's kind of hard to place a modern day value on that work. [00:16:42] So how much is this painting worth?

(Michelle) It's a tricky question to answer because we have what Mrs. Gardener paid for it, which was 3000 pounds in 1894, which would have been the equivalent of four hundred forty thousand dollars in today's money. It is interesting to ponder that and think about if four hundred forty thousand dollars could be, depending on where you are in the United States, could be the equivalent of a house or two houses. And so that's interesting to think in terms of are you willing to spend the equivalent of today's house in order to acquire something. Then one of the other things to think about is how much is four hundred forty thousand dollars with any amount of money total that Mrs Gardner would have had in spending, or the equivalent of what she would have spent back then. So just thinking about different classes of society, what we choose to spend our money on, [00:17:40] what was the vision behind purchasing it.

[Jane] What Michelle is saying is art was very important to Mrs Gardner but she also was very wealthy and she could afford to buy a painting that was worth as much as a house. But in terms of how much the painting would be worth now, well, Michelle says she doesn't know. Since the museum won't ever sell the painting, it's impossible to know how much money it would be able to get for it. If something is not for sale it's hard to put a price on it.

[00:18:08] [Jane] So we've been looking at Lucretia, and here we are at a different painting. It's very different. Describe it.

[00:18:15] [Michelle] So here we have a painting of Hercules after he's gone through various challenges and he's not wearing very many clothes. [00:18:25] He really is just wrapped in a cape that's made out of a lion's skin, of a lion that he has vanquished or defeated.

[Jane] And you can see the tail of the lion hanging down behind him.
[Michelle] Yes, and the paws are tied like a string kind of around his neck in and around his waist and then he's holding this really big stick. That was his weapon of choice against some of his enemies there. And, unlike the other painting where it's filled with soldiers and there are weapons drawn, this is also a soldier with weapons drawn but he's not really wearing a lot of protective gear. And he's also taking up most of the painting itself so it's almost life size in that way.

[00:19:05] [Jane] It's also very different in color and in materials. Can you talk about the difference because the Lucretia painting that we were looking at is so bright and vibrant and this one is dull by comparison?

[00:19:20] [Michelle] Yes, so the dullness comes from the fact that the pigment of the paint is applied while the plaster is wet. So the painting that's very vibrant as oil paint, that has been applied with different brushes or tools onto a wood panel or a wood structure. With Hercules, this is actually a part of the artist's wall where, while the plaster was being applied to the wall, the painting was added in chunks at a time so the artist had to think very carefully about what the painting overall would look like and then create little pieces at a time, whereas the painting of Lucretia, he could kind of add and tweak it as he went along. So the dullness is because the pigment or the paint is mixed into the plaster, so it has kind of duller type a surface quality because of that.

[Jane] And was this ever part of a bigger wall, this painting?

[Michelle] It was part of a bigger wall and it was part of the artist Piero della Francesca's home and so it's kind of amazing again thinking about value that this was part of a larger wall. It's just interesting to think about Mrs. Gardner buying something that was not only something created by a wonderful artist but part of his home and just what did that mean to have to cut it away from the wall and how did it get here. So it has some interesting facets to it because of that.

[00:20:40] [Jane] So it would be like if you painted on your own bedroom wall and then somebody said “I want to buy that.”, and came out and took apart the wall and paid for it and paid for a new wall so that they could have your painting on your bedroom wall.

[00:20:51] [Michelle] Yes, or if your family has to move and you move to a different city, then let's cut out a piece of the wall and load it on a truck or a ship and take it with us. So how much meaning does it have to you or how important is that [00:21:03] to have with you?

[Jane] Michelle, thank you for talking to us about this artwork and how we think about value in art. I appreciate it.
[Michelle] It's my pleasure. Thank you so much for visiting the Gardner Museum today.

[00:21:14] [Jane] Could your wall art ever be that valuable? Part of the reason Mrs. Gardner spent over a million dollars in today's money on Hercules, is that the artist created it for himself and his house. And, just a reminder, you probably shouldn't paint your walls just to find out how much your art is worth. You know, unless your parents say it's okay.

That's it for us this episode. If you want to see the two paintings we were talking about at the Isabella Stewart Gardner Museum we have photos up on our Web page and on our Facebook page. Thanks to the museum and to Michelle Grohe for giving us a tour. If you decide to make your own paint from rocks or plants or anything else, we would love to see a picture of the art work you make. We'll put it up on our Facebook page for the world to see…kind of like a virtual museum.

While you're making art, we will be working on another episode. We're back in two weeks with an answer to that age old question “Why is the sky blue?” plus a few other astronomical questions. And our guest is going to be the woman who leads educational programs at NASA, the U.S. space agency. If you have any thoughts on that or if you have other questions, send them our way. Have an adult help you record your question on a smartphone. Be sure to include your first name and town and how old you are. Send your question to questions@butwhykids.org. You'll find all the instructions on our web page.

I also wanted to let you know about a special event we're having. We're going to have a listening party on June 25th in Vermont. I hope it will be as fun as it sounds. We're going to be listening to episodes of the show, meeting people and recording questions for future episodes. Again, it's Saturday, June 25th at Shelburne Farms where you can also learn how to milk a cow and collect eggs from the farmyard chickens. [00:23:08] If you're anywhere near Shelburne, come on over, and if you don't live in Vermont it's a great time for a visit. We have all the details about the event on our Facebook page. But Why is produced by me, Jane Lindholm, and by Melody Bodette at VPR Vermont Public Radio. Our theme music is by Luke Reynolds. We'll see you in two weeks. Stay curious.