Cool Tools Show Podcast Episode 065: Paolo Salvagione

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Our guest this week is Paolo Salvagione, an artist who works at the intersection of engineering, participation, and levity. He has sent his studio visitors out a one second-story window and back into another on a 900-pound steel wheel, and created scent-based sculptures that use smell as a touchstone for memory. He worked, for over a decade, as lead engineer on the 10,000 Year Clock of the Long Now Foundation.

Mark: Welcome to the Cool Tools Show. I'm Mark Fallon Felder, Editor in Chief of Cool Tools, a website of tool recommendations written by our readers. You can find us at cool-tools.org. I'm joined by my co-host, Kevin Kelly, founder of Cool Tools. Hey Kevin.

Kevin: Hey. It's great to be here.

Mark: In each episode of the Cool Tools Show, Kevin and I talk to a guest about some of his or her favorite uncommon and uncommonly good tools they think others should know about. Our guest this week is Paolo Salvagione. He's an artist who works at the intersection of engineering, participation, and levity. He has sent his studio visitors out on a one story window and back into another on a 900 pound steel wheel and created scent-based sculptures that use smell as a touch tone for memory. He worked for over a decade as lead engineer on the 10,000 year clock of the Long Now Foundation. Wow, Paolo, those sound like pretty amazing projects.

Paolo: The people were the best part. I mean it's always the people you get to work with. The projects kind of bring together, but let me tell you, there's some really amazing people on the various projects I've worked on.

Mark: You've got a few different tools here that you wanted to recommend today, so why don't you pick one and tell us about.

Paolo: Let's start with the greenlee tool, the quick stripper.

Kevin: Quick stripper. All right. Okay. That sounds a little risque but go ahead.

Paolo: Yeah. It's anything but. When you get into engineering things can sound risque but they're not that at all. I feel like anyone who's worked on electronics projects have kind of run into this drawer full of things that looks like pliers that are punitively for stripping wire and all they kind of really do is they notch the conductive elements. They occasionally will strip off the insulation. Often they will even pull the insulation over the wire and kind of extend it out so you kind of have to cut it again and then when you do that you end up with the insulation pulling back. I've always found that if there's a lot of something in a drawer, that means no one uses it and so often you'll find the drawer just filled with these things that do a really horrible job.

About 2 years ago I was working with a collection of people on a project and I stumbled on the greenlee 45000 and not only does this thing allow you to kind of quickly adjust what wire gauge, but it also allows you to quickly adjust what amount of stripping you want to do on that wire. It will even let you gang up four or five wires at a time. It's unbelievably nice.

Kevin: The idea in general, your stripping where to either twist them into one of those [inaudible 00:02:42] for joining wires or you're going to solder them so that's basically ... It's stripping the insulation from insulated coated, say copper or aluminum wire, right?

Paolo: You got it. Most of it ... The wire gauges goes from 34 to 8 and so you're kind of mostly in the electronics domain. You're not necessarily in the doing this for your home building. It's mostly Arduino prototypes building out different kind of things with low voltage, low amperage type of electronics and wiring.

Kevin: Is it a little bit smaller in size and the kind of-

Paolo: It's about the same foot print, maybe a touch bigger and a little bit thicker. It's lighter because the ... That's the other thing that I started working on in the last two years is to get my electronics kit lighter because I was tired of carrying it around. It's a nice solution that also reduces the weight of the kit that I have to carry around.

Kevin: It's a little pricey though.

Paolo: I know. That's the worse part of it.

Kevin: $70.00

Paolo: I know. That's always the ... I don't know how many times I've come up against the price versus quality buy it once buy it right. I feel like there's an entire conversation

we could have about tools and how much you should spend on them and how often you use them. Which is probably outside of the scope of our conversation right now but I think that this one you can also find on Ebay and other venues for less than ... What are you looking at? Amazon right now?

Kevin: Yeah. Amazon Prime, $70.00.

Paolo: Yep. Yep.

Kevin: They seem to have two gauges or two sizes. One was the 12 [inaudible 00:04:22] was a 10 [inaudible 00:04:22]

Paolo: Yep.

Kevin: Does both or is that two separate-

Paolo: Let me look-

Kevin: Dials.

Paolo: Let's see here.

Mark: This one says it does between 28 and 10. The higher the number the thinner the wire [crosstalk 00:04:38] right?

Paolo: Right.

Mark: I think standard ... The kind of hook up wire or jumper wire that people use on solderless breadboards is probably 24 [crosstalk 00:04:51]

Paolo: Mostly the 20's. Yeah. Mostly in the 20's.

Mark: It's going to handle that and I imagine if you are really into protopying and using Arduino and soldering circuits, the kind of stuff that ... Like projects that are in Charles Platt's book, Getting Started in Electronics or Make Electronics, this thing is probably a worth while investment because I agree with you, using the other kinds where you notch the copper. That's really a stress point and makes it weak.

Paolo: Also, you don't get the full rated current. This one, in my mind, the nice thing about this is you do all of the kind of 20 stuff. I really don't go deeply into the 30's because they're just too thin and then you get most of your power connections. When you think about 3.3 or 7.4 battery packs for whether it be quad copters, a lot of those things, they're all right 12 gauge, maybe at the extreme 10 gauge but rarely are they 8 gauge. I feel like it really gets you everything you need in one tool. Or everything I need, I should say.

Kevin: Yeah. So you've got your one piece wire stripping tool.

Paolo: It also has a cutter on the bottom, I forgot to mention. I don't know if you noticed that. There's a little hook down there so you can actually cut.

Mark: If you're into electronics, you buy this thing and then you basically ... That problem is solved.

Paolo: Correct. The only problem that isn't solved is they walk away because people really like them. So make sure to scratch your name in it somewhere because I think this is my third one.

Mark: Yeah. If you take this to a maker space it will sprout legs and walk away.

Paolo: Exactly. Someone will borrow it. They'll forget who they borrowed it from. There won't be any malicious intent.

Mark: No. No.

Paolo: They'll just be like whose was that? And then it won't end up in your bag on the way home. Also, there's kind of ... For the sci-fi people out there, there's kind of a really wonderful Aliens type effect when it strips. It actually has two mouths, one that kind of grabs with the insulation and then it has an internal mouth with teeth that kind of grabs the insulation and pulls it off of the wire so there's kind of this wonderful moment of "whoa" as you kind of use the tool.

Mark: That's very cool. Already. Let's move on down the list. We'll let you pick from the other three.

Paolo: Okay. Why don't we just keep going through it the way I listed them. The next one, I'm just going to jump around. I thought about staying in one domain but I thought it'd be fun to visit a couple of domains here. The next one is a Glu-Bot and this is designed by the wood industry to put down glue in a really nice way on things that you're gluing up. One of the things that no one talks about when you're doing adhesives is something called drool which is when you're trying to lay down an adhesive depending on the viscosity you get to that moment where you want to stop but the glue bottle doesn't and so you end up with little drips on the floor, on your hands, on the part of the wood that you didn't want the glue on which you end up wiping off and depending on the finish of the wood that might affect future staining or anything else you want to do with it.

Which can be a real bummer. What's neat about this bottle is that they've designed it so that ... A couple of things. First, it takes the glue from the bottom instead of the top which means that you don't have to worry about the skin or the viscosity

difference between the bottom and the top of the whole thing because oxygen slowly usually dries things out. The second thing is that the way they've capped it when you let go of the large chamber it creates back pressure on the small chamber which pulls the adhesive back into the bottle which completely ... Not completely ... I would say 90 percent of the time deals with the drool problem. That was one of the things ... That's how this kind of came into my life and then they make a small version of this and my girl friend is a beekeeper and she now uses it exclusively for dispenses honey. Because that's another problem, you're always trying to get it to pour out or whatever because it takes from the bottom and pushes out the top. It always instantly puts honey out.

Mark: That's cool. As a honey dispenser.

Paolo: As a honey dispenser. She even called the company to make sure that the plastic was food grade and it turns out that it is and so it's even able to do that without any problems.

Kevin: The normal we'll call it the glue version is 16 ounces and so the-

Paolo: She uses the teeny, I think it's the 4 ounce once.

Kevin: Yeah. I see it okay.

Paolo: Yeah. Because she does honey tastings where she'll ... Different seasons and difference varieties so you'll have eucalyptus, blackberry, lavender and most people haven't sat down and literally side by sided those different honeys and this was a quick way for her to dispense the honeys onto Popsicle sticks so that people can taste it.

Kevin: Just for the record, this is called the Fast Cap Babe Bot.

Paolo: [crosstalk 00:09:44]

Mark: What kind of glue do you put in it? I see Amazon recommends that you buy a gallon of Titebond wood glue for $18.00 which seems like a good deal but maybe you have a favorite kind of glue that you put in it.

Paolo: Titebond has I think three ... Titebond has I think three ... I use Titebond three because it's waterproof. The other two ... Each of them has a collection of properties that is important to the individual using them. One of them will have a longer work time so if you're trying to set something up and you don't want it to stick together too quickly and another ones waterproof. I feel like everyone has their favorite kind of glue or collection of glues that they use and so I would say do a little research and make sure that it's an adhesive that works with the project you're working with.

Kevin: You normally use Titebond three, you're saying?

Paolo: I use the three because most of what I'm doing is I want it to stay together and I want water to be able to get on it and I don't want the water to leak in the joint. They also have a list ... They have a little cap that has a lanyard on it that you can use to cover the dispenser. They have another little accessory that goes around the dispensing tip that's basically a pair of tongs so that when you're running it down the edge of a board it keeps the glue can centered.

Kevin: Ah.

Paolo: They have a couple of other ... If you kind of dig in there they've got five or six other little features and I would say 80 percent of them I use and the other 20 percent I wish I did projects where I used them.

Kevin: It's kind of like a system?

Paolo: It is. That's a good ... That's exactly what it is. Somebody sat down and thought about it.

Kevin: That's cool.

Mark: That's a great one. Especially the honey idea is amazing.

Kevin: Yep.

Mark: Yeah. I know it's-

Kevin: Also imagine though, the little ones you might have different glues and different ones. You might have a whole set of glues, maybe, type one, two, or three or different things in the little containers that you may not use as much or as often.

Mark: That's exactly what I have. I have a handful of these in the shop with different types of adhesives. I have one with a silicone base adhesive, one with a wood-based adhesive, etc and I use them.

Kevin: Great. That's a great idea.

Mark: Okay. So that this next one is something I've never heard of but I realize I need it already.

Paolo: I know. This is one of those things where somebody should make the boy scout badge which is just somebody hitting their forehead with the palm of their hand kind of like "Aw, I should have thought of that." This is amazing. In the arts, I often

transport things, works that I've purchased get rolled up they get sent to me and there's always this challenge of like how do I de-roll it and this is a company that makes a device that someone introduced me to and I'm just smitten with it. It's super simple. It's a piece of plastic that's got foam running on both sides and a metal tube and basically you roll it out, you set the object that needs to be de-rolled in it in the opposite direction of roll and then you roll it back and then maybe engage the Velcro for a minute or so and then unroll it and the object is flat.

Mark: That's fantastic. [crosstalk 00:12:51]

Paolo: I get a lot of art prints sent to me in tubes and this is the thing to flatten them out, right?

Kevin: [inaudible 00:12:59]

Paolo: It's so good. It's so good. I couldn't believe how well-

Kevin: So, I'm looking at an image of it. There's a pen or a dowel, a fat dowel. Is the table part of it or do you bring your own table?

Paolo: The table is not part of it. You pick any table. You just roll it out. You stick the piece in, you roll it out, there's a piece of Velcro at the end. Depending on how thick it is you work on ... It's humidity, temperature, altitude, there's a pile of things that you kind of have to work on it. If you end up de-rolling it too much in the other direction you flip it over and de-roll what you just de-rolled. So it can get really recursive depending on how specific you want it.

Kevin: Right. I think there's a video that they tell you how that works.

Mark: This thing ... It's more expensive than I would imagine for something that does this.

Kevin: Yes.

Mark: Wow.

Kevin: Around $300.00.

Mark: So what-

Paolo: Again, I linked to their website but I found it through another vendor for about half that.

Mark: Okay.

Kevin: Is there a kind of a homemade version? Would that be very hard to hack?

Paolo: You know what, it would be so easy to hack. This is so hackable. It's literally ... You could buy the plastic material fairly easily. It's probably about maybe 10 to 12 mL's thick. The two pieces on either side are standard rubberized trim that you might put around the door to stop the winter from sneaking in when it's cold and then the tube itself with VHB and a piece of aluminum that you could get McMaster Carr. You could completely make this without a problem yourself.

Kevin: It sounds like a good instructable or make project.

Paolo: Yes. Definitely. Get right on that.

Kevin: Yeah.

Mark: For me, if this were $40.00 to $50.00 I would probably get one or if there's good plans to make one for around the same price, too, I think that it looks like a worthwhile project.

Paolo: Yeah. Definitely. I imagine an order from TAP Plastics an order from McMaster Carr would pretty much cover everything including rubberized end caps. I feel like that's a pretty quick one for someone out there to put together and post on [inaudible 00:15:25] instructables. You didn't give me a financial constraint on my favorite cool tools. [crosstalk 00:15:35]

Mark: We had [inaudible 00:15:33] Green on and she was giving us $200,000 pick and place machines.

Kevin: Yeah. No I mean for someone in the right time, the right business this would be the perfect thing without thinking but we always do like to have alternatives and I think making your own would be a huge option, a really cool thing.

Mark: All right. Tell us about a couple of related tools. We have nuts and pop nuts. Are they the exact same kind of effect.

Paolo: To me it's the same thing and it's in that weird space where when I first discovered this tool, I think it has been purchased by a couple of companies and there's a whole bunch of trade name, patent, [inaudible 00:16:30] going on which I didn't really want to parse. What it basically is, is it works very much, or it feels very much like you're using a pop rivet but what you are actually doing is you're installing threads in something and I first ran into this in the bicycle industry where I wanted to add another water bottle cage to my bike and so what it does is it allows you to drill a hole in a tube and you have to know where to drill and there's a pile of other things so just don't go start drilling into your bicycle, but you can drill a hole into a tube, you can put this thing in here and with the thing that looks like a pop rivet

gun, you basically insert a nut in a way that it won't spin and then you can screw on your additional water bottle cage.

Since then, I've used it to basically add nuts to the side of my refrigerator, put nuts inside of the trunk in my car so when you can't get to the backside of something you can't really put a nut there and so like when you life up the bottom of your car and you see all the sheet metal pieces that basically reinforce, you can drill into a couple of those, not all the way through obviously because you don't want water in there but you go ahead and put a couple of these nuts in there and you can screw a series of things into that sub-assembly. It's really nice in the sense that it allows you to kind of put something in place that allows you to kind of almost breadboard a bunch of ideas in different locations.

Kevin: The nuts that are being inserted, they're actually, I guess their called a nut, that you screw in to. Those comes with different dimensions? Different sizes?

Paolo: Exactly. Metric inch. No whitworth. Sorry about people who really wanted whitworth. Different lengths. Different, what they call a grip range which is how thick the piece of material you're trying to grip with the nut itself and so you can do up to like an eighth of an inch down to like to like 20 thou grabbing it so it's kind of flexible in that way.

Kevin: Are they different materials, too?

Paolo: They're made out of different materials. I mostly use the stainless steel ones but they also make them out of aluminum for lightweight as well as zinc plated steel.

Kevin: You have the gun and then you just buy the little nut rivets.

Paolo: Exactly. In this case, I bought the kit and these days I mostly use metrics. I brought the metric kit and then I kind of re-fill it as I need it.

Kevin: It's like a pop rivet that's reusable in a certain sense.

Paolo: The rivet itself stays in place. What you attach to the rivet is kind of the reusable or the re-purposeable part of it.

Mark: There's a little video that I posted just an eight second video that shows how it gets kind of squashed into place and so you kind of do this ... If you drill a hole and you don't have access to the bottom of the hole it will still work. That's pretty cool.

Paolo: Yeah. That's the neat part of it and then also, even if you have access to the other side, a lot of times you don't want to hold the nut in place while you're tightening something and so not only does it give you the advantage of not being able to access the backside but it's actually fixing the nut to the object that you're

squeezing it onto and so you don't need to get the wrench out for the other side so it's kind of like removes a tool from that operation of taking things apart and putting things back together again.

Mark: Does it handle a lot of torque like if you put a crescent wrench on it and just go like "Ugh". Is it going to-

Paolo: I've found that they make a series that has a really strong grip and it's got a knurled outside body as opposed to a slippery body and I found that those do pretty well but remember, you're like attaching this to sheet metal. You're not attaching it to like an engine block so what I've often done is when you overdo something you actually start wrecking what you've attached it to, not the nut itself. Or you strip the nut out because it's not like it's got a whole lot of threads in it so I feel like if you get one that's designed to handle the torque, you're going to either wreck what you've attached it to or pull the threads out of it before you spin it.

Mark: Those are amazing tools. Thank you so much, Paolo. I'd love to hear about your latest art project. We have a few minutes. Maybe you can tell us what your working on.

Paolo: Recently I've been working on ... There's a number of things that historically get embedded into the objects we make and when you think about the history of just say machine tools I feel like each generation takes a bulk of their knowledge and they embed it into an object in the sense that before somebody came up with a lave that cut a certain collection of screw dimensions on, like you know fine or coarse, you used to have to do that by hand. There was a generation of people who kind of embedded the ability to cut fasteners on a lave and the history of kind of like adding, I don't want to say intelligence, but that's kind of a common word to use and as we move into the digital age with a lot of the devices we own there are a group of individuals that make decisions about gets embedded into these objects.

I'm really curious, especially as an artist when I don't have access to what gets embedded I really kind of am annoyed because I want to play with, let's say the ... An algorithm that decides gender or an algorithm that decides beauty. I want to look at the stack of images. I might want to even change the stack of images that a group of individuals used to dictate what that algorithm measures and hence in the future compares and says this is a man, this is a woman, this is beautiful, this is not, etc. In a sense there's an embedding of an ideology into an object that I don't have access to and I'm grumpy, interested, and I want to play with them.

Mark: Tell us a little bit about the thing that sends your studio visitors from one window to another.

Paolo: Yeah. That was a fun project. At the time I was out at the Headland Center for the Arts and I had asked the studio director to put me into a different studio every

quarter over a year and when she took me to that studio and said this ones avaiable, it was unusual in that it was an attic and it had two windows that were really close to the floor and the first thing I thought about is I thought about when you're in Europe you see those magnificent clocks that basically have a series of [inaudible 00:23:00] that go out one window and into another and there could be someone beating a drum or someone chasing someone or someone riding a unicycle or ship slowly going by and it usually happens at noon. I'm kind of faced with this kind of opportunity.

I thought wouldn't it be fun to like kind of put the people in the position of the thing that is being displayed and let them go from this idea of being the audience or the viewer to being viewed and have a conversation around that and that's kind of how that started and then it was a matter of sitting down and putting on my engineering cap and getting everything together and then talking to a structural engineer, getting the insurance, and then sending people out the second story window. There's a seat belt by the way. That was the only concession I made. [crosstalk 00:23:44]

Kevin: So nobody died.

Paolo: Nobody died but I was kind of bummed that I had to have a seat belt.

Kevin: Yeah.

Mark: This is cool. I'm just looking at your site at Salvagione.com that's S-A-L-V-A-G-I-O-N-E.com. The main thing ... I love the things that you do, the mood or variations of little artists mannequins that are kind of based on ... Inspired by a mood or museum of human curiosities. Those are really cool and just all sorts of great stuff. This is a fantastic site so I really encourage people to take a look at what you're doing.

Kevin: When you're moving between windows, does that happen at noon?

Paolo: No. I mean obviously I want as many people to experience this as possible and so I ended up doing the mathematical pun came out and the amount of time it takes to go around is pi so it's 3.1415. Which is about the length of a pop song so I figured that was kind of like the attention span I could get one individual to go through and then people just lined up from there so it was just kind of constantly sending people out the window during the open houses.

Kevin: Do you live in New Mexico now?

Paolo: No. I live in Sausalito.

Mark: Paolo. This has been incredibly fun and I just want to let people know that you can check out all the tools that Paolo recommended by going to Cool-tools.org and you can see all the show notes. Paolo, thank you so much. This has been really fun.

Kevin: It was really great, yeah.

Paolo: Really great talking with both of you.