

-The New Unicorn Tutorial-

This tutorial is somewhat different from my previous ones in that I'm not narrowing down the materials too much. The actual sculpting medium you use is entirely up to you, and this tutorial will focus on my process more than anything. I sculpt using many materials- polymer clay, air-dry stoneware clay, wax, plasteline, paper clay, and epoxy putty- but for all of them the techniques used vary little.

This tutorial centres around designing, sculpting, molding, casting and finishing a piece. I hope you will find it useful in whatever medium you sculpt in.

Disclaimer

Casting is a very intensive, time-consuming, dirty, dangerous process- not to mention costly. It has taken me many many hundreds of dollars and almost five years to get to learn it. If you have never used silicone before then please start with simple triangular-composition pieces, and get the little sample packs of silicone instead of gallon buckets. All this unless you have lots of money, thick skin, and a reckless and impulsive temperament, in which case go right ahead and start large!

Materials

-This is simply a list of everything I used, please do not regard it as a shopping list! Use whatever suits you-

I've put parenthesis around the brands I use, though you can, of course, pick your favorite makers.

- * Plasteline Clay (Chavant, Jolly King)
- * Tools (see below)
- * Silicone (mold max 20, smooth-on)
- * Urethane Resin (smooth cast 300, smooth-on)
- * Clear Epoxy Resin (Castin'Craft)
- * Soft Pastels (Rembrandt)
- * Acrylic Paint (Winsor&Newton, Atelier)
- * Vacuum Chamber
- * Vacuum Pump
- * NIOSH Approved Respirator
- * Hair/Fibre
- * Spray Gesso (Krylon)
- * Matte Finish Spray (Krylon)

- * Matte Medium & Varnish (Atelier)
- * Clear Enamel (SIG)
- * Mineral Spirits (Crown, turpenoid)
- * 18 and 12 gauge steel wire.
- * White Epoxy Putty (Milliput)
- * Fabri-Tac glue
- * Jewel-it glue
- * Polymer clay (Sculpey Firm)
- * Soft Plasteline (Van Aiken)



Delicious tools. Here we have:

1: grabby things

Grabby things such as tweezers, pliers, calipers and compass

2: Needle tools

Used for texturizing and sketching onto the clay where certain features will go

3: X-acto Blades

Absolutely essential for any clay work, to carve.

4: Ball-point tools

One of the most useful tools, used for smoothing, intenting, everything.

5: Trimming tools

Used to scoop out areas of clay for rough detailing

6: Brushes

Used in combination with a liquid that breaks down the clay (such as mineral spirits) to smooth

7: Dental Tools

All-purpose tools used to smooth, indent, and shape

8: Clay shapers

Nifty rubbery tools used for making smooth, fine detail



The Clay I will be using, a mixture of Chavant NSP, Jolly King, and Klean Klay. Plasteline is an oil-based clay which will not harden. If using with silicone it is absolutely essential the clay be sulphur-free.



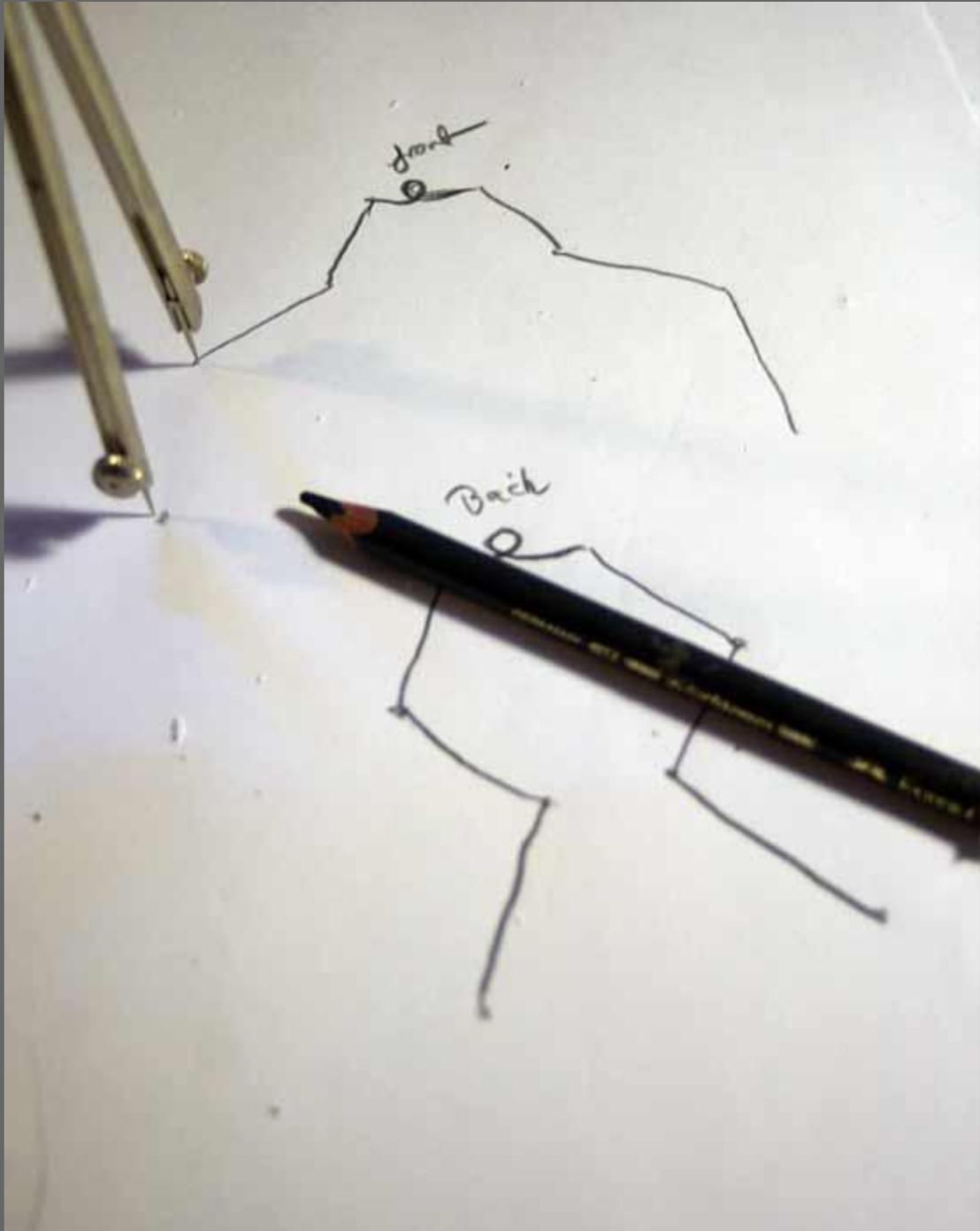
My casting materials, in the middle is the vacuum chamber, mold-max 20 silicone plus activator, and the resin, smooth-cast 300 (for this mold, however, I should be using smooth-cast 305) Also pictured is the ventilator, which is absolutely essential for casting work. It's not cheap, but it's a lot cheaper than new lungs. Also the vacuum pump which, as you can see, is about 50 years old. There's no reason you have to get a new shiny one, an old one is fine as long as it works. This creates a vacuum of 700mm of mercury (mmHg.) That's all you need.



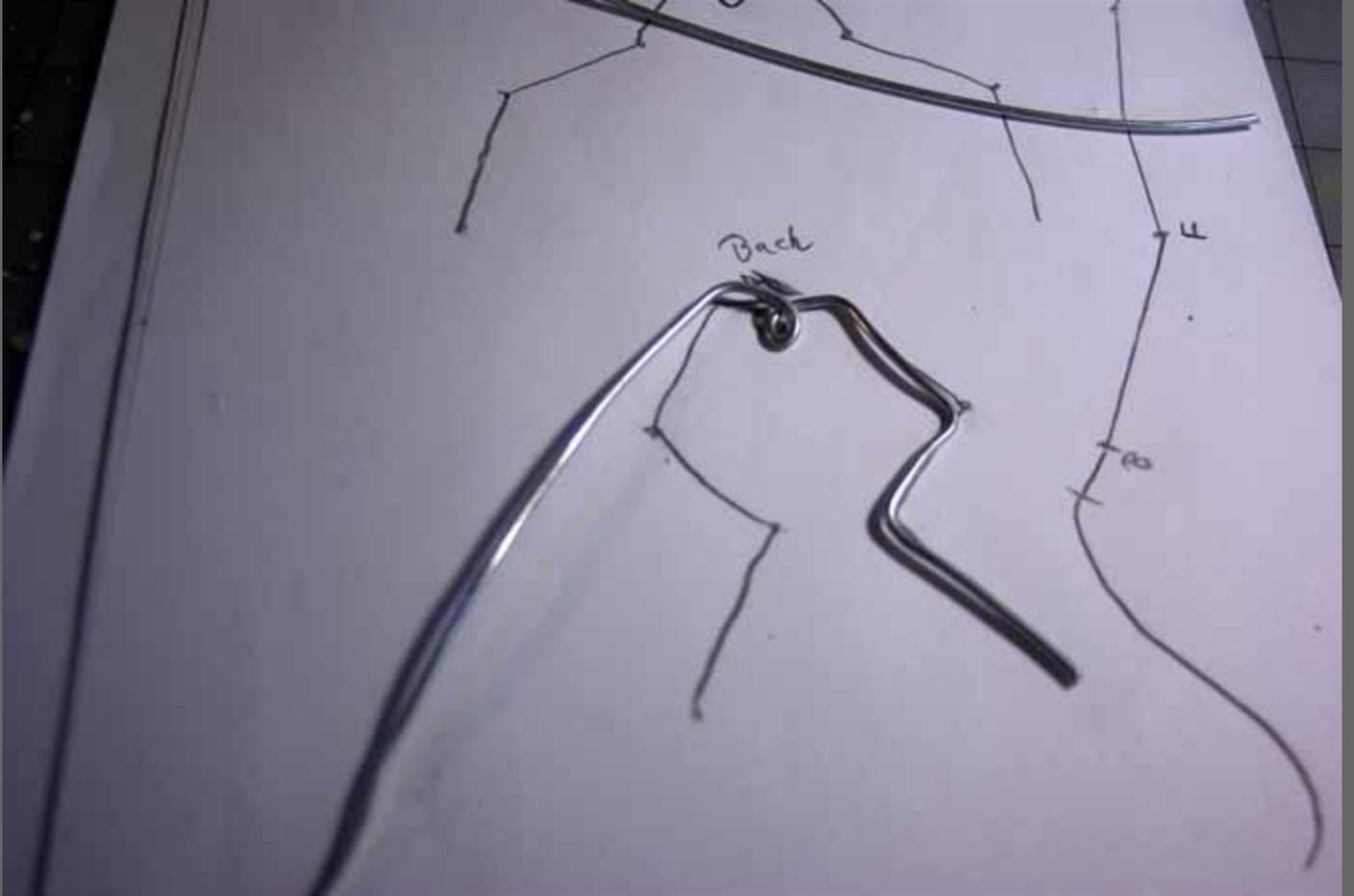
My basic planning for each mold sculpt consists of doodles marking undercuts complete with planned areas for air vents, and here I've drawn how the sculpture will connect to, and slot into, its base.



Once the plan is planned, I sketch out a plan for the armature. This plan corresponds to the actual size the model will be, and the body shape I would like (lithe, exaggerated neck) I also include a dorsal view with how the armature will bend in that dimension.



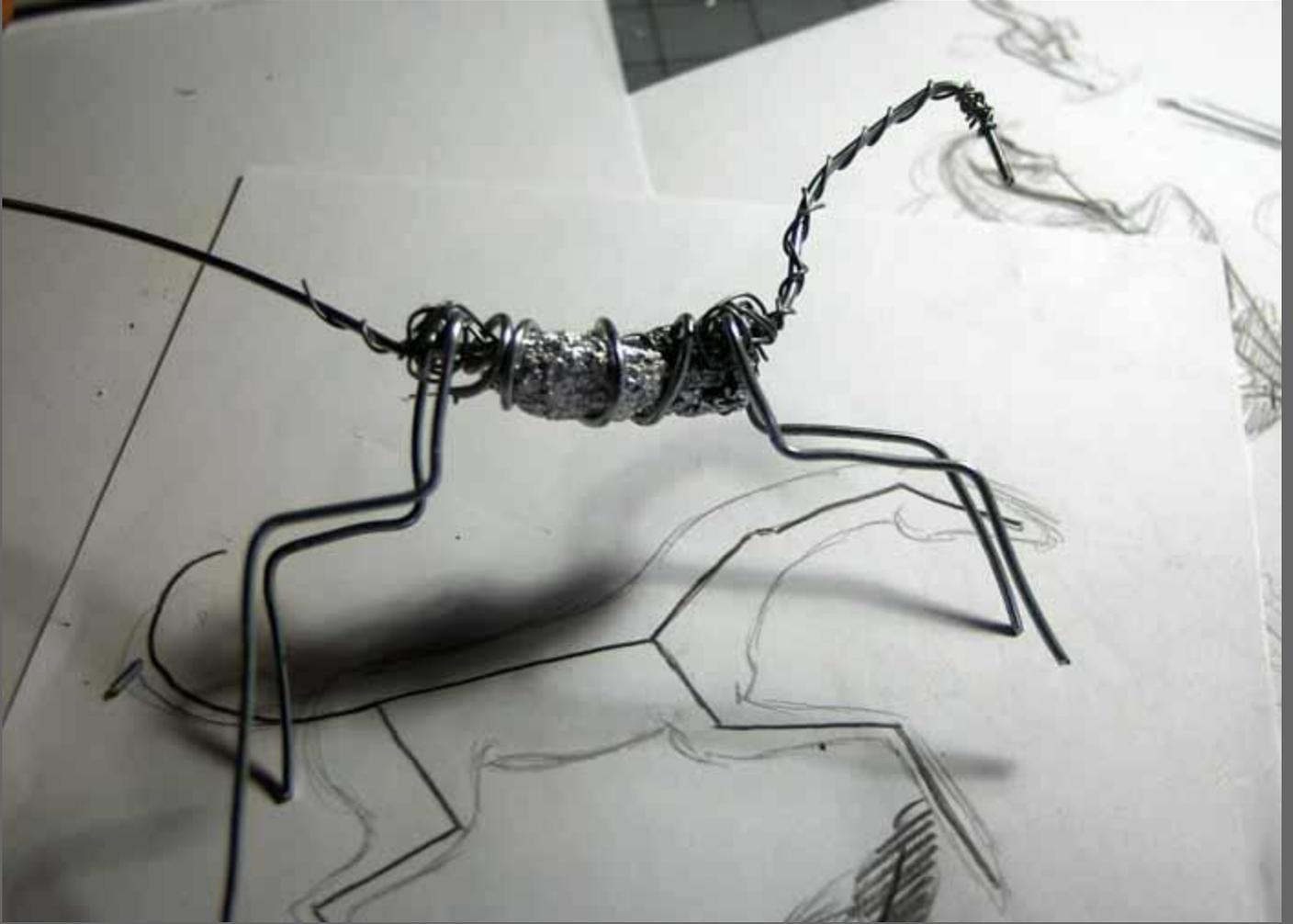
Using the compass, I measure out each section and draw the template onto a plan.



Using pliers, I bend the main 12 gauge wire to fit as closely as possible the armature plan. As you can see, the armature at this point is flat, so I simply take the entire leg in the pliers and bend the whole thing 90° so the knees face forward. Same with the other set of legs.



The skeleton, as you can see the rear right leg is longer because it needs to include an extra part to slot into the base (as shown in the original sketches) At this point the armature is not set in place.



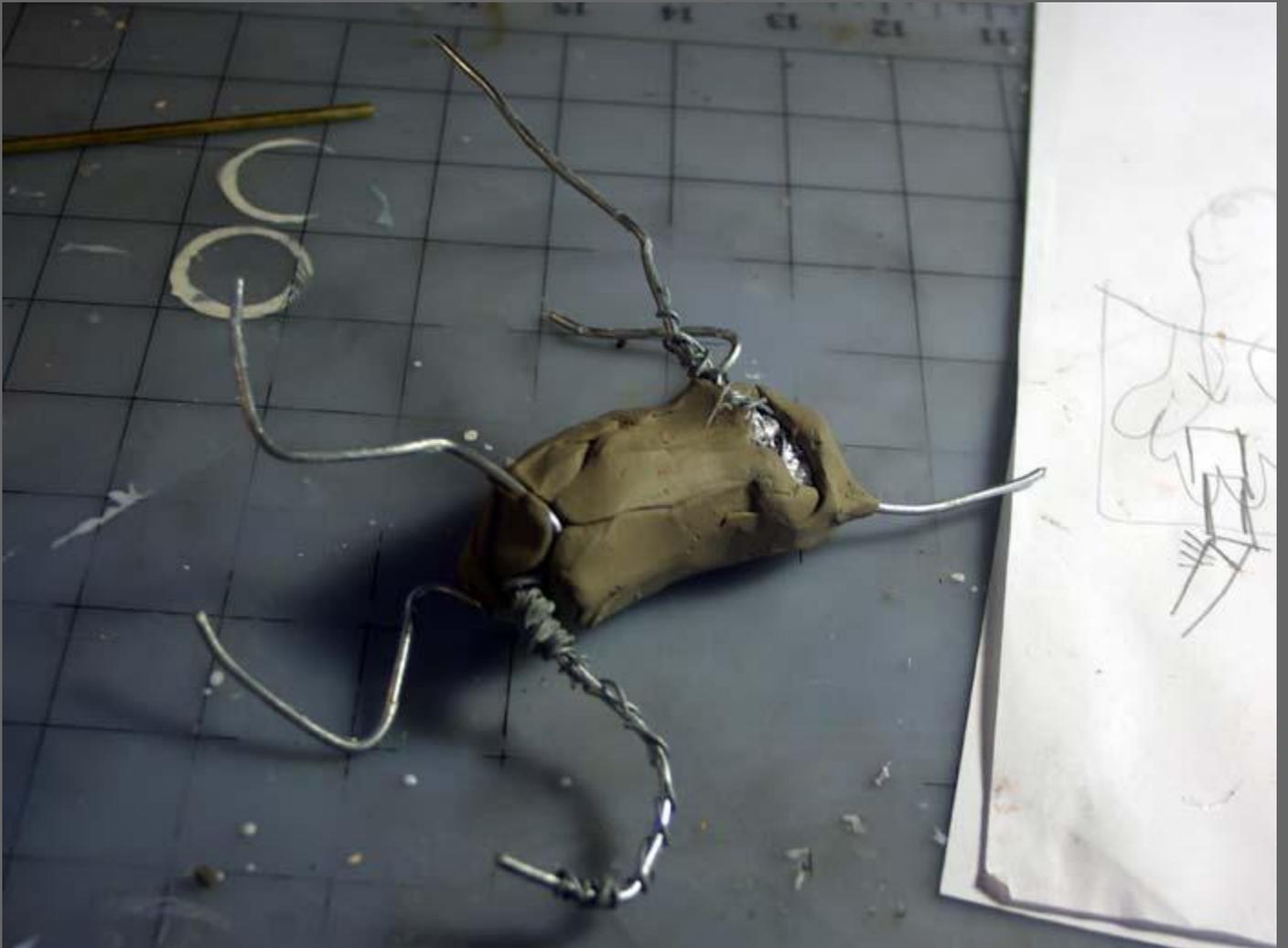
I fix the armature all in place by wrapping thinner (18/20 gauge) wire around and in it. For a polymer clay sculpture, I would probably put a lot more wire around it to give it a lot more substance, but master sculptures for casting are basically meant to be destroyed, so the only function of the armature here is to hold the thing together until that point.



A bit more wire has been added, and the middle was bulked out with aluminium foil. I've also bent the armature into the general design and made a base. The base is essential for silicone casting as the silicone will be poured on top. Sometimes with a simple sculpture or one where three or more points touch the ground, the sculpture can be glued to a base after it's completed, but only one point touches with this sculpture, so it needs to be planned out with a base in mind.

I've coated the armature in a non-porous glue called Jewel-It. This will act like floral tape on an armature, which is to

say create a tacky surface which the clay will adhere to.



Here we go! I start by just slapping on clay in the general shape of the sculpture. No detailing at this point, it will only be squished.



The neck is fleshed out a bit, and the blade is used to sheer off chunks of clay and form the general shape of the shoulders.



The sculpture (He needs a name really doesn't he? Let's call him Jim.)
Jim has been fleshed out a bit more and has had his neck shaped. The right back leg as you can see has a blob of clay

extending down, which will slot into the base. This is more of a placeholder right now to help me visualize, it will be reworked later.



The best thing you can do in any medium where the whole sculpture stays soft (so epoxy putty and fast-dry clays are excluded) is sculpt the head first. This is because you'll be holding the body in order to work on the head (probably) and if you've already detailed the body, you'll squish it up by holding it. I tend to hold my sculptures by the midriff, and so this is the last place I'll work on.

So, here we have the main blob of the head being placed on, the seams being smooth so it is attached, and the beginning of the planning for the basic shape. For sketching out onto the sculpture where features will go, I'll use a needle tool.



The legs have been stuck on by rolling out a snake of clay and pressing it onto the armature roughly carved into shape using the X-acto knife, and I'm inserting glass beads in order to form nice smooth eyes for the casts. I have a little horse skull model back there which I've put musculature on to as a guide.



Little pieces are rolled out and put on Jim's face to indicate major features such as the nostrils and eye ridges, I've

also sculpted out the general shape of the chest.



More pieces are attached for the cheek bone and the upper lip. The nostrils are carved out using the X-acto knife in a circular motion. At this point I'm using the ball-point tools to smooth on the extra bits of clay I'm adding.



All the pieces are smoothed on, and I use the ball-point tool to emboss the large features. I'm going for an arabian-type look. Arabians are, in my mind, the best horse to base a unicorn off of (they can also be based on deer, goats, and mixes of ungulates) because arabians are distinctly different from, say, a thoroughbred. The Arabian has all these arches in his body, the arch of the neck, the stem of the throat, the dip of the short back, the high tail, not the mention large heads and eyes, the gait, and the intelligence. They're fantastical creatures in and of themselves.



I use a paintbrush with mineral spirits to smooth out the facial features to something near what they will permanently be.



The eyes have been fleshed out using the techniques already seen, and I've moved down Jim's body to the shoulders and neck. At this point I'm using the trimming tool to gouge out clay to form the shape of the musculature, all the while I'm smoothing it using my fingers.

He's also gotten his ears. These were made by getting two balls of clay, rolling them into ovals, and using one of the pointed clay shapers to form the inside of the ear. They were then attached on. If you're working on a one of a kind sculpt where this will be your final product, you'll want to score the ears where they attach and make sure they're

stuck on really good.



The neck area is fully sculpted here, using mainly the trimming tools and a paintbrush with mineral spirits.



The red clay you see here is Chavant, which is a lot harder on its own than what I've been using thus far. The legs, as you can see, are attached to poles which act as air vents after the model is molded. All undercuts (parts of the model that angle downwards) need air vents in order for the resin to enter them during casting.



The legs are getting some detail now, as you can see the front left leg is complete



The other side of the sculpture, mostly completed apart from a few feet and the part which will insert into the base.



Jim became a bit hot from being overworked, so I went ahead and threw him in the freezer. This is a good trick for polymer clay and wax too, which also become unworkable when overworked. Plasteline only needs to be in deep freeze for about 10 minutes before it comes out all nice and hard. As you can see here, the right back leg is complete.

At this point the sculpture itself is complete. If you're working in polymer clay, this is the point at which you'd bake it, and proceed to the last steps of this guide.



Here is where I went wrong, so so wrong. This is a complex sculpture and I realized that in order to remove the model from the silicone I'd need to access it from the belly, so I'd need to fill in that area so it didn't fill with silicone (it'll make more sense when you see the silicone pictures, it took me a long time to wrap my head around to thinking in double reverse.) So being a bit of an idiot I decided I'd remove the centre support. Big mistake. I quickly realized that the centre support had been the only thing holding the Jim in one certain position, and when removed he started to flex and fall over! His feet were torn off by the sticks, he fell over and got a few dents in his neck and shoulder, and for a few hours it really looked like this would be the end of him.

Good thing for glue. I whipped out some superglue and just started liberally smothering the sticks with it in the places they touched the base, I reattached each foot over and over, them constantly being mangled after fixing. I had spent hours originally working on the feet, yet now I was just slapping them back together. I decided I needed to cut my losses- worst case scenario I'd mold the sculpture, cast a resin, rework the resin cast, then make a new mold from that one.

That was the worst case scenario, luckily it hasn't come to that!



Jim got frozen again so he'd stick in place while I built the mold box. I make my mold boxes out of Van Aiken Plasteline, which is really soft and useless for anything other than making a mold box from. Plasteline makes good mold boxes because you can form it around only an inch or so from the body, thus saving a LOT more silicone (if I'd made the mold box as long and wide as the wood base, I'd have needed about 17 cups of silicone, as it was, I only needed 6.)



The mold box going up. After this point I build it inward, staying close to the body. After it's complete I filled it with

water to test if it was water tight and also to measure the volume of water that went in, as that would indicate how much silicone I would need- nearly 6 cups.

I haven't included photos of the molding process as I go over that in *Moldmaking: A Brief Overview*. However, to summarize, I placed Jim and the fridge overnight to minimize the chance of the sculpture falling during molding. In the morning I measured out three cups of silicone at a time, as that's the maximum the bowl I use will hold while allowing for it to expand twice its original volume. I weighed the silicone and then mixed in 10% of that weight in the activating agent. The bowl was then placed in the vacuum chamber and the pump switched on. The silicone sits in the chamber for about 20 minutes or so at 700 mm/Hg. The silicone expands and seems to boil slowly as all the gas is literally sucked right out of it. Then it is poured slowly into the lowest point in the mold box. The second batch of silicone is prepared at once and poured in too.



You're supposed to wait 16 hours for it to cure, but once it's hard to the touch, it's fair game in my eyes. I peel away the plasteline, seen here with tape for extra support, and a big pink glob with no seeming way in is revealed. Time to get the X-acto knife back out.



After 2 hours or so of carefully cutting up along the inside of each leg, along the belly, up the neck and along the chin, Jim is finally visible.



Hi Jim!



Jim is given a funeral consisting of sticking his flesh into a ball to reuse later, and putting his armature aside to be reused, and we get on with the casting process. As you can see the mold has been taped together, I try as hard as possible to match up all the seams where the silicone was cut.

At this point, put on your gas mask, open all the windows, and get some ventillation going on, also, gloves

The resin is measured out in equal parts, then mixed in a can. Avoid plastic mixing things as the chemicals will dissolve them, and they'll often warp under the heat caused by the reaction between the two parts of resin. Cans are sturdy, wont melt, can be bent to have a spout, and (most importantly for me) they're free. If you don't have excess cans then you need to eat more beans.



The resin is mixed for a minute, then poured into the foot holes. This is the first cast attempt. As you can see, the resin has gone white where it has hardened, and you may also note that a few of the vents don't have white tips. This is bad, it means the air vent is clogged or the resin has hardened too fast, and it means the cast will likely be missing limbs. That was the case here. I went through four casting attempts before getting a viable cast. Most were missing two or three legs, but one had one whole leg, and only half a body. Pretty creepy stuff. I filled a box with rejects. My problem was that I was using my usual smooth-cast 300 resin, which has a demold time of 10 minutes. All well and good but it'll harden in 3 minutes, and that wasn't long enough for this mold, the resin needed to harden slower and be used in combination with the vacuum chamber in order to draw out trapped air. However, for most sculptures smooth-cast 300 is just fine.



Random unicorn legs make awesome parrot toys.



Here is my fifth attempt, We'll call him Jim II. As you can see he's messed up, quite a bit more so than usual, but he has all his legs, and the rest is a matter of trimming and sanding.
Jim II is going to be put aside for a few days while I work on the base.



This is the basis of the base! I used a piece of polymer clay and molded it around Jim II's base-stump, then baked it hard.



I've never sculpted water before, so I pulled up a few photos of splashes and basically squished flat pieces of clay onto the base. Ideally the Jims would be touching the base at three points- the main foot, the front right hoof, and the rear left hoof- this will minimize pressure on the main leg (although I cast them with a brass rod inserted into the leg resin to reinforce it) and make the whole thing more sturdy.

At this point I'm just using my fingers and ball-point tools to smooth the pieces on, and an X-acto blade to cut out little holes.

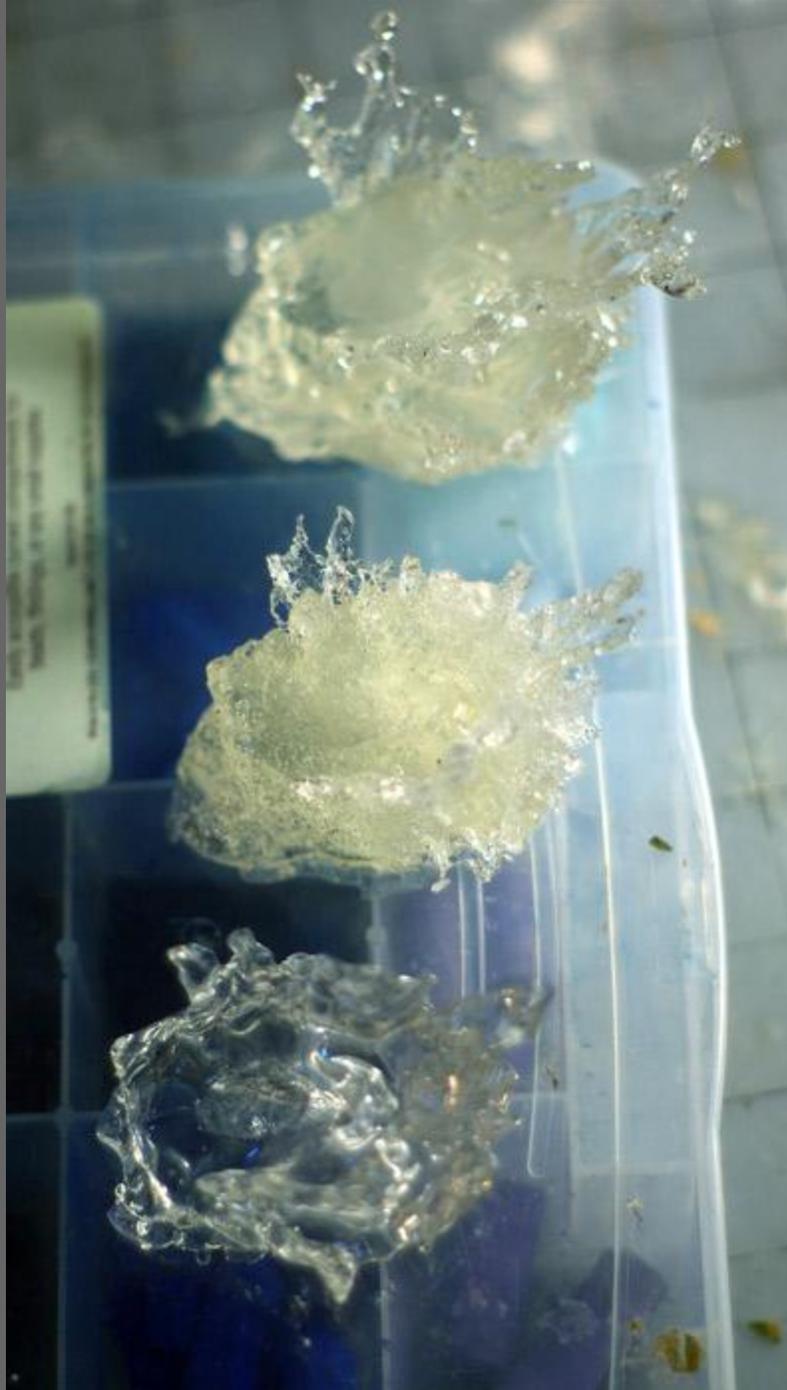


I realized, after sculpting a few little water-drop balls that I could just stick a bunch of beads onto it! Eureka! As you can see the base has been smoothed out using mineral spirits and a brush.

I molded it the same way as I did Jim, this however is a much easier mold, and I didn't degas the silicone because I thought the bubbles would be beneficial, as they would serve to make it more watery!



I cast it in white resin first in order to view more clearly the details. I notice some of the beats look like beads, so using the knife I went into the silicone mold and carved off the little bits that made the bead-holes.



At the bottom was my first casting attempt, as you can see it's almost perfectly clear. This is because I fully degassed the clear resin and put too little activator in, so all bubbles vacated the resin. It's pretty to look at, but it has no action to it, a splash is not perfectly clear, it's partially opaque. This cast also left some gooey uncured resin in the mold which took an hour to clear out.

The middle one was my second attempt, I put too much hardener in and it hardened way too fast and is nothing but bubbles. It's also missing a few top pieces because there was still some goop left in them from the first casting, I finished clearing them out and tried again.

Third time lucky- the top cast is EXACTLY what I was going for, it is a little opaque with bubbles at the bottom, while being clear at the top. The partial opaqueness it also needed to help hide the Jims' base stumps, which are opaque resin.



So now I have a good base, I go back to Jim II. I carve off all the flashing (thin sheets of resin where it leaked into the seams) and sand the model down. If there are distortions from the seams (where the model doesn't line up quite

right) of more than half a mm or so, I'll carve them and go over them with white epoxy putty.



He's pretty much done here. There is some dirt, and discoloration between the epoxy putty and resin, but his general form is alright. I drilled into the forehead, inserted a horn (I make horns on mass and keep them in a box, either cast from resin or made from epoxy putty, this one is the latter) used superglue to fix it in and then sculpted around and up it using the white epoxy putty.



Put your gas mask back on for this step! Spray Gesso is VERY toxic

I get out the spray gesso and go to town. It's best to hold the can at least a foot away, otherwise the gesso will drip. He gets two or three layers of gesso. He's pictured here in the second base, which is serving as a stand so the main base doesn't get gesso-y

You can, of course, use regular gesso as a base, or a binder medium. But I like the even finish of spray gesso, and I

love the final texture, which is like an egg-shell.



Once the gesso is dry, I paint up his base stump with blue enamel. This would, I hope, give off subtle blue refractions around the base.



Now for "painting" Jim II. It's essential that everything be kept clean here, so wear gloves to deal with the pastel dust, and use clean hands to deal with the sculpture. I've decided to go with pure white for simplicity's sake. Appropriate colours are ground to dust and put in these containers.



Starting with the lightest colours, I use a clean paintbrush to rub in some of the dust. Some people use fingers in the pastel dusting technique, but I find it makes things greasy. A finger is an oily thing.



When the model doesn't seem to want to take anymore colour, add a fine coating of Matte Medium spray, wait for a minute, and keep working. You can build up colour indefinitely this way, but here I need only a few coats. I also went over the rest of Jim with white pastel powder to give him a nice uniformity.



The final colours are added, along with some pink on the joints, between the legs and where the legs meet. I paint his eyes with a small brush and different shades of blue, and use diluted paint to give the muzzle a watercolour effect. I then use gold enamel and paint the horn and hooves in one coat.



I fig Jim II into his base using hot glue, which will help fuse the clear resin to the white resin. I gave the base of the base a little coat of watery blue paint to carry on the effect. I went over the whole base and eye with clear enamel to maximize the shine, and put a mm or so of clear resin in the bowl of the base where the foot it, so make it look like it's underwater a little.

As you can see here I have his hair out are ready. It's a mix of random hair I found in my hair drawer (yeah, I have one.) Some is wool I found, there's a little mohair I actually cut off of my Tofu sculpture when I was reworking it for casting, and there's some unraveled yarn also.



I get a little wad of hair, snip the end so it is even, and glue it on using Fabri-Tac (fabri-tac creates an amazing bond with hair that I've never seen any other glue manage, so I recommend it over all other glues.)



Starting from the bottom, I stick locks on going upward, just smoothing each one on as I go. The final piece has to be carefully placed so as to cover the forelock and first part of the mane without looking gluey. But Fabri-tac is good at not looking gluey anyway.



Same happens with the tail, starting at the bottom I work my way to the base, careful to hide the fact that it's glued on.

He looks a little crazy here, so his wild wild mane needs to be tamed.



Like Jim II, I suffer from fizz-prone hair, so I wet his locks and coat them in a little hair serum and finish it all up with secret weapon, then he gets a brief blow-dry, and he's done! It really is all THAT simple...



D'awee.

