

LAWN DINOSAURS by Rich & Allison

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This was my first attempt at foam carving. It is not hard coated with anything, just painted and glued to a wooden base. It is four feet long and sixteen inches high. Not the best, but it gave me a lot of experience at very little cost.

BASIC BUILDING TECHNIQUES

This page will hopefully give the newcomer the basic information needed to carve/sculpt his or her own large scale Dinosaur. I will be talking about a sculpture that can be displayed outside and the things to be considered before starting the actual project.

Planning may be the most important part of your project. Before you begin spending money, have a good idea of the materials needed and how much of each you will need to complete your project. I made my share of mistakes and wasted a lot of money and time by being in a hurry. Take your time and think before you make your first cut. **Like a good carpenter, measure twice cut once.**

My best advice to a first time foam carver is to buy a sheet of foam and practice on a small scale at first. My first Dino was about four feet long. I did not cover it with any type of hard covering. I simply painted it with acrylic artist paint from Walmart. The only cost to me was the foam, paint, Loctite 5 min. epoxy for plastic, a scrapping rasp (pictured under Building materials) and some 80 & 120 grit sandpaper. If after making your first sculpture you are still interested in the hobby then at that time you can invest in hard coat covering materials like Styrospray at www.industrialpolymers.com or fiberglass cloth and Epoxy/Resin at www.uscomposites.com or Apoxie Sculpt and other taxidermy supplies at www.vandystaxidermy.com

A: This is not a building technique but is an important consideration. **YOUR WORKSPACE.** You will need a place to create your masterpiece. It must be big enough to comfortably move your project around both standing up and laying down, and have a door big enough to get your sculpture out once your done. A garage is usually big enough and ventiation is usually available. Ventilation becomes important when covering your foam with Epoxy or Styrospray or when doing a lot of hot knife cutting. Also, I used a sheet of plywood on top of a box as a work table. Have your work table at a height that lets you work without straining your back.

Step # 1. Deciding on the dinosaur you want to build.

For the beginner, choose a dinosaur that is not too complicated or adorned with horns, spikes, plates, armor etc. In my opinion, a small sauropod would be a good first project. Let's say we have decided on a Diplodocus. We want it to be about 10 Ft long. An adult Diplodocus would be around 100 ft. long. Your Dino will be 10 Ft. long, or 1/10th scale. Locate on the WEB some good pictures or drawings of a Diplodocus. Get both skeletal and fleshed out pictures. Save your favorites so you can refer to them quickly. In my opinion the most important picture you need is a good side profile of the skeleton, preferably one that shows the animal stretched out (neck straight and tail straight) so you can get good measurements. Bring the side profile skeletal drawing up on your computer screen. Use the custom screen sizing tool to get the drawing to be 10 inches long on the screen. This means that every inch you measure on the computer screen is equal to 10 ft. of the full size Dino or 1 ft. long on your sculpture. Divide the screen drawing into four sections, skull, neck, torso, and tail. Use a tape measure, a ruler or better yet a caliper and begin your measurements. From the drawing on the screen measure the length of the tail, write the length down on paper or better yet in a spreadsheet. Let's say the tail is 3.75 inches long. the torso is 2.5 inches long, the neck is 3 inches long, and the skull is .75 inches long. Multiply these measurements by 10. This will give you the length of the body parts for your project in feet. Then multiply by 12 to give the measurements in inches. You will use this same formula to measure the other body parts.

Examples:

Legs - Measure each joint separately ie: upper leg bone, then shin bone, ankle bone, foot, length of toes and claws. Remember on four legged dino's, the front legs and hind legs will usually be different sizes. At the bottom of the foot area, leave some extra space for final adjustments. In other words, the drawing of the foot will have extra thickness on the bottom. We will use this extra thickness as a safety measure and sand it off as need-be to get the feet to touch the ground correctly. This is one of the last steps in the carving process.

Arms - Measure upper arm, forearm, palm of hand, length of each finger, and the length of each claw as above.

NOTE: Many artist illustrations of skeletons also show an outline of how it would look if the flesh was on. Use these outlines to get the thicknesses of a fleshed out Dino.

Tail - Measure the thickness of the tail at the base, middle, and tip of tail.

Neck - Same as the tail.

Torso - Measure the thickness of the torso from the lowest part of the belly to the highest part of the back. Also measure from the ground to the bottom of the belly. The width of the body can be found from a top down view if you can locate one.

In general, measure everything you can. In the long run it will save you time as you will be using your full size drawing as a template for your sculpture. Have all your measurements on one sheet of paper and refer to it often while making your drawing and cuts. Also, if possible, print the picture from the computer and mark the measurements on it.

Now that you have all your measurements done, it's time to make your drawing. Get your brown or white wrapping paper role and lay it out on a flat surface that you can draw on. Make sure there is enough paper to get your complete drawing on, minus the legs and arms. Use a pencil **only** as you will need to erase and re-do sections that you are not happy with. I usually draw a flat long line to simulate the ground at the bottom of the paper, about an inch from the bottom is sufficient for this. I prefer to start my drawings by first marking out the lengths of the three major profile parts: head with neck, torso, and tail. A yard stick or long straight edge is very helpful. Do not worry about the legs and arms as these will be done on separate pieces of paper and shifted around to get a pose that you are happy with. Remember, usually each leg is bent differently, so most likely you will be making four drawings, either four legs, or two legs and two arms.

Use your measurements as the center-line of each body part. For example, the torso line will be drawn half way between the belly and top of the back. You will end up with a Dino that looks like a stick man. Once this is done, use your thickness measurements to add the flesh to the drawing. Simply divide the thickness by 2 and put the results as a mark above and below the stick dino at the appropriate places. Once you have placed the thickness marks on the paper, simply begin connecting the dots using free hand and light pencil pressure. I would do the torso section first, that way you can adjust the neck and tail marks to suit your desired body shape and pose. ie: head high or low, tail high or low. When done with your drawing, cut it out along the outside edges of the drawing. Remember you will have left and right arms and legs. Keep this in mind when cutting and carving or you may end up with two left legs. **Very frustrating, I did it .**

When drawing the legs be aware that the angles are different between the forward hind leg and the rearward hind leg. The wider the stride / gate, the bigger difference, especially at the ankle and foot positions. Carefully examine the artist's drawing to see what I'm referring to. Don't think you can simply make two hind legs exactly the same and expect them to touch the ground properly. I personally think all Dino's look better with some amount of leg stride difference because its adds a sense of motion. It is a little more work, but well worth it.

Let's talk about the foam.

My favorite is the blue insulation foam boards. I use all three thicknesses. The various sizes allow me to make minor thickness adjustments, thereby reducing the amount of carving or sanding needed. The 2" sheets are the most used. The 1/2 " and 1" sheets are used mostly as part wideners and spacers. I also used the 1/2" size as a stiff permanent template for future sculptures. Since we are using sheets of foam, we are going to have to glue them together. Rather than glueing several sheets together to make a big foam block and carving down from this one big block, I prefer to make my sculpture in pieces or sections. The pieces are not glued together until I am happy with the profile and thickness shape of my sculpture. Leave square edges and do not begin to round out your pieces yet.

My procedure is as follows:

- 1) Trace your profile onto a sheet of one/half inch thick foam. When satisfied with the profile. carefully cut this out using a hand saw or sabre saw.
- 2) Make a duplicate of the first profile. These will become guides for the left and right side of your sculpture. Mark them as left and right sides.
- 3) Using masking tape, tape the two profile halves together.
- 4) Take the drawing of the left hind leg and trace it out on a piece of 1/2" foam, cut it out and mark it as the left hind leg. Do the same for the right hind leg. Take the left hind leg and place it on top of the left side profile in the appropriate position.
- 5) Take a 1/4" all-thread rod and screw the all-thread straight down through the left leg (at a hip bone rotation point) and through the two taped together profile pieces. Now remove the all-thread rod and take the left leg and match it up with the right leg. Both upper thighs should be nearly identical and should match up pretty well. Screw the all-thread through the existing hole in the left leg and down through the right leg. Now remove the all-thread again and line up the holes on the left leg, the center profile section and the right leg. Then re-insert the all-thread through all three pieces and add washers and wing nuts on both ends. Gently tighten, leaving enough slack to be able to rotate the legs. Spread the legs to get the stride length you desire and snug up the wing nuts.
- 6) Because we are making a four legged dino, we will repeat steps 4 and 5 for the front legs. Before making the holes in the front legs, make sure you are happy with their placement. You can do this by either using a long 2 x 4 to simulate the flat ground, or draw a line on the ground, etc. With the hind legs touching the ground line, place the left front leg on top of the profile near the front of the torso at the appropriate shoulder position. If the torso is too high or too low then simply rotate the front portion of the torso up or down, while keeping the front and hind legs touching the ground. Remember, if either of the hind legs or front legs are a little too long they will be adjusted by sanding the soles or bottom of the feet during the foot shaping steps. now continue with repeating step 5.

You now have a flat dino profile with all the flat legs temporarily attached. Snug up wing nuts so the legs don't move when the pieces are picked up. Now have somebody stand this temporary dino up on its feet. Step back and look at it. If you are happy then proceed to step 7. If not, adjustments are best made by elongating the hole(s) that are in the profile section. Re-tighten the nuts when satisfied.

7) Without letting the legs shift, lay the dino flat on the ground. Because of the all-threads sticking out you will need to place something under the dino so it lays flat. Now carefully trace around the outside of the upper legs onto the profile section. Do this for both sides. (You have now completed the **firm material template** for your dino.)

8) If you have not already decided on how wide the torso will be at the widest part, its time to do so now. Let's assume it is going to be 14 inches wide. That is, the finished torso will be seven slabs of 2" thick foam sections eventually glued together.

(You may be thinking that step 8 means the tail, neck and head are going to be 14" thick? Don't worry, this is why I prefer to cut my profile version into three sections. Section one will be the head and most of the neck. Section two will be a small portion of the neck and the torso with a small portion of the tail. The third will be the remainder of the tail. About 2 to 3 extra inches each of neck and tail should be left on the torso section.)

9) Now take apart the foam template and un-tape the two torso sections. Make sure to mark where each piece was located. Take one of the template torso sections and make a mark where you would like to divide the three sections. Now trace the torso section onto a 2" thick sheet of foam board. Repeat this process 6 more time using the 1/2" template only. Try and place the tracings as close together as possible in order not to waste too much foam. Carefully saw or cut out the seven torso sections. Stack them up and set them aside for now.

10) Now take each profile template and cut out along the previously traced leg positioning lines. Again make sure each piece is marked as left and right side. Save the small sections that were cut out, and again mark them, and save them as they may come in handy later.

11) Let's rough out the legs now. Trace each of the four legs from the 1/2" templates onto a 2" foam board. Mark them as to which legs they are, left front, right rear, etc. Because we are explaining how to make a Diplodocus and it would have heavy legs, somewhat like an elephant's. Let's imagine that we want our hind legs to be between 5" to 6" thick. This means we need to cut out three identical 2" wide pieces for each hind leg. The front legs may be a little thinner, say 4" to 5" thick. For those we could use two pieces that are 2" thick and one piece that is 1" thick. At this point, I hope you are beginning to understand why I use all three thicknesses of foam (saves carving time and money). Again, remember to leave a little extra foam on the soles of the feet, we can always sand them off later. Personally, I would make the toes/claws separately and glue them on and use Apoxie sculpt to blend them into the leg. Note: try and make all your cuts at a 90 degree angle to the flat surface, because we are going to fit the legs into the torso.

12) Take one of the 2" thick torso pieces and mark it as the left side. Now take the left side torso template and lay it on top the of the 2" piece. Match it up as best as possible. Don't worry if they don't exactly match, because we will square up and round off the edges and corners later. Now trace the leg openings onto the 2" piece and repeat for the right torso side using the right side torso template.

13) Take one of the un-cut torso sections and the left and right recently cut torso pieces and use two all-threads at least 18" long and screw them through all three pieces and bolt them together. I would put one through the small neck section and one through the small tail section. Try very hard to screw them in at 90 degree angle. Use a small piece of 2 x 4 and pre-drill a guide hole. If you have a drill press, use it to make the guide hole in the wood. We will fill in the holes later with scrap foam and light-weight spackle. Once the three pieces are bolted together we can trial fit the legs into the pre-cut leg openings. You may need to sand the inside of the leg openings in order to get the legs to drop in. Do this gradually, sand a little and trial fit. Repeat as often as necessary. Once they are all fitted, stand it up, step back and eyeball it from all angles. In an abstract way, it should be starting to look like something. Check to see how it is standing. Is it leaning too much in one direction? Write down how you plan on fixing any small problems, but don't fix any yet. In some cases, you will sand some off the bottom of one or more feet, and worst case, you can glue a flat piece to the bottom later on.

14) Using your imagination, try and envision the finished piece. How many more sections of torso will you need in order to get the right thickness? How many more leg sections? Start adding sections to the torso in the middle until it starts to take shape. The same applies to the legs, tape them together. **A WORD OF CAUTION!** If you decide that you need to add or take off thickness, it is vital that this be done before gluing any sheets together. In this project, we are planning on using seven 2" pieces for the torso. At this point we would have 5 pieces without leg cut-outs and one piece of torso on the left and right outside sections of the torso with the leg holes already cut out. This means we have 10" between the hind legs. Imagine that you decide that you only want 8" between the hind legs. The best way to solve this, is to duplicate the cut-outs in the next 2" sections. But now you only have 6" between the legs! No problem, I would use a 1" thick sheet and trace out a spacer piece, using the small cut-out from the template. One piece for each side. Mark it, as it will be glued in a little later. You may want the front legs a little closer together, so maybe no spacer will be necessary. It's up to you. Don't bother trying to carve into the foam to adjust the depth. It is nearly impossible to get the legs to fit right, and by using the spacers you always end up with a piece that lays flat, keeps your legs vertical, and is easily glued. Okay, we should now have an un-glued fat torso waiting for the rest of the tail, neck and head.

Steps 15 & 16 describe a dino having a straight tail and straight neck. step 17 will describe how I put a bend in the tail or neck.

15) Use your 1/2" template, trace out and cut out one 2" section each for the neck & head and for the remainder of the tail. With your torso in the standing position, have someone hold the tail section flush with the rear of the torso. Eyeball it and imagine about how many more sections you will need on each side to get the correct cross-section thickness. Remember, the tail is going to taper down, so you only need to add additional sections that are long enough to allow for a nice taper.

16) The neck is a little different than the tail. The neck does not taper as much and usually ends up with a wider head. Keep in mind that I would make the neck thick enough to be the same thickness as the head will be.

17) If you look at my gallery, you will see that all my sculptures have at least a minor curve to either the tail, neck or both. My *Coelophysis* and *Dimetrodon* are the exceptions. Their necks are straight, but their tails curve a little. The easiest way that I have found to add some curve to the neck and/or tail is to make it straight at first, then cut out a section from the neck or tail and replace it with a curved section. This curved section can be added at almost any place, but I prefer either near the torso or near the head. If you decide on a curve, make sure it is thicker at both ends compared to the sections that are remaining. After it's glued in place, you will do the necessary sanding, carving, or thinning. Once you gain experience, you will come up with your own solutions for putting a curve in a neck or tail.

18) We are almost ready to start carving! The first thing to do is to tac-glue the torso parts together. Your sections should already be marked as to their position, but if not, do so now. I would mark them as **C** for center, the left side sections as L1, L2, L3 and the right side sections as R1, R2, R3. I found that several small dabs of Loctite 5 Min. epoxy for plastic works very well and the glued parts are workable after about twenty minutes. Glue part L1 to the left side of section **C**, then R1 to the right side of section **C**. Continue until all sections are tac-glued together. Try to keep the glue away from the edges where you will be carving on, as the epoxy can be a little hard to carve or sand. Use flat boards with weights on them to press the sections together for a good tight bond. Before starting to actually carve, take a magic marker and draw a border line about an inch or more away from the leg cut-outs and from both the front and rear ends of the torso. When starting to shape the back and belly, avoid the areas inside the border lines. The reason for this, is that it is better to have a little extra foam to sand off after the neck and tail portions are glued on and when the legs are attached. With foam carving, **it is always easier to take more off than to try and add some on**. You may want to draw a straight line down the center of the back (head to tail) and try not to sand on it until last. Frequently check from the front and back to make sure you are taking equal amounts off from each side. Alternate sides frequently and refer to any good fleshed-out pictures you may have. I usually use a fillet knife or Ginzu knife to take off foam from the squared edges then switch to the rasp to round off. I also leave the belly for later, this way I can set the torso upright on the flat belly while working on the back. As you start to round the rib cage, occasionally set the legs in and do a little rounding on the upper thigh areas. If you switch between working on the torso and then on the upper outside leg portions you will begin to get a sense of how to blend the body into the thighs. Before I forget, take your magic marker and draw a line on the inside of the legs where they meet the torso, then write no-sand on the upper inside leg portions that fit into the torso. If you want, you can take a break from working on the torso and switch to the head and neck section. Again, always leave extra foam on the area that will be glued together. After these pieces are glued in place you can then finish off the thicker joint areas.

WHEN SHOULD I GLUE THE LEGS, NECK, AND TAIL TO THE BODY?

This is a judgment call on your part. Once the legs are glued on, they tend to get in the way as you shape the areas where they meet the body on the belly side. Before actually gluing the legs on, ask yourself this question: **(If I glue the legs on now, will it make my job harder or easier?)**. This question can apply to when to attach the neck and tail as well. My experiences have led me to delay attaching these parts too soon, as once they are glued on they can be easily damaged as you rotate the whole body around to position it for easy carving or sanding. Make some foam wedges from your scrap foam to stabilize the body while on your workbench.

HOW TO ATTACH THE TAIL AND NECK TO THE TORSO:

I use two methods.

The glue and hold method: Using 5 minute epoxy for plastic, I first hold the tail to the torso when it is lined up in a way that I like. Then I have a helper mark reference lines at three or more locations around the attachment points on both the tail and the torso. I will then apply the epoxy and hold the tail to the torso with pressure. I use the reference marks to keep the tail properly aligned. With this method you will need to hold the tail to the torso for ten minutes or longer for it to set before releasing the pressure. This method works fine on short tails and necks or on smaller sculptures/carvings.

The rubber band method: With this method I mark the reference lines as described above. I then use two all-threads and screw them through both the torso and tail or neck about six inches from where they will join together. You will have several inches of rod protruding from both sides. Mix up your epoxy and apply it to the tail or neck press the tail or neck to the torso, aligning the reference marks, have your helper stretch out and slip a rubberband over both the front and rear all-thread rods, one on one side then one on the other side, until you have enough rubber bands to firmly hold the two parts together until the glue/epoxy is dry. This method allows you to use slower setting glues or epoxies.

SHAPING THE HEAD:

19) For this example, I am assuming we are going to have a closed mouth on the dino, I start shaping the head starting at the front of the snout and work towards the rear of the skull. First, looking straight down onto the top of the head area draw taper lines from the widest part of the skull to its narrowest. Use your measurement sheet to place the marks. Don't worry about contouring the skull at this time, all you are

doing now is getting a rough wedge shaped skull from a top down view. When you get fairly close to the shape you want, switch to a side view and draw lines to represent the taper you desire from the side or profile view. Once done, you will have a four sided wedge-like shape that tapers down from the back of the skull to the nose area. Now you can use a magic marker and draw temporary eye sockets, nose holes, lip/mouth lines and any area that may have a ridge or an indent. As you sand/scrape off the lines re-mark them frequently. As you begin to contour or round out the skull, alternate the areas you work on in order to help keep the skull symmetrical.

At this point, I cannot help much more with the final shaping of the sculpture/carving, other than to say take your time. Think before you do something and use light pressure while scraping or sanding. You are the sculptor, your finished piece will be what you want it to be. With dinosaurs, we have a lot of lee-way, as to the bulkiness or slimness of your dinosaur.

OPEN MOUTH SCULPTURES:

I make my full size drawing with the mouth shown open. I cut out the open mouth and trace the drawing onto the foam following the lip lines. (no teeth). I use a small hand saw when I am cutting out the mouth and make my cut just inside the lip of the mouth line. You will end up with a rough wedge shaped cut in the mouth area. I then switch to my dremel tool with a sanding drum on it. I dig or sand my way into the throat area. I then use a flat piece of wood with 60 or 80 grit sandpaper glued on and around both sides and use the edge of it to sand my way down into the corners of the mouth. I will continue to use this home-made sanding file to sand down to the lip lines on both the upper and lower parts of the mouth. From there I switch to a small piece of PVC pipe and wrap various grits of sandpaper and begin to hollow out the lower inside of the mouth and the same for the roof of the mouth. I will continue with this process until I am satisfied. Note: You need to have the mouth opening wide enough to get your hand in, and be able to drill holes for the teeth and set them in place.

I make the teeth out of Apoxie Sculpt and individually shape the teeth to the same or similar size and shape and number as those depicted on an actual skeleton. Set the teeth aside on a sheet of wax paper and let them harden (over-night). Once hard I will use my dremel tool to sand them into a final rough shape and then switch to 120 - 180 grit sandpaper or an emery board to finish them. I leave the root of the tooth as a pointed shape. Assuming you are done with all the sanding in the mouth opening you can now make the teeth sockets. I use a felt pen and mark the locations for the teeth. I usually use the pointed dremel filing stone and use my fingers to spin the stone into the foam to make the sockets. Trial fit the teeth into the sockets and make any adjustments that may be necessary. A helpful hint is to take two pieces of scarp foam and mark one as lower jaw and one as upper jaw. Drill holes into the scrap foam pieces and use them to hold the teeth in their correct socket positions. They become a rough duplicate of the sculpture's mouth, this way you won't get your teeth mixed up. (Trust me, this is very handy.) When you have spare time, you can paint the teeth your shade of white. I usually paint them while there are in the scarp foam holders. Paint the upper part of the tooth then when dry take it out and put it back in upside down, and paint the root portion, two or three coats are usually enough.

You can now shape a tongue of your liking and trial fit it until satisfied.

If you are satisfied with the way your mouth and teeth will look, you can now coat the mouth with Styrospray. Apply about three coats or more to the inside of the mouth. Try not to get too much into the tooth sockets. You can also coat the tongue at this time. Let the mouth and tongue dry over-night. Once dry, re-fit the teeth and make adjustments as necessary. When satisfied, remove and return them to their correct sockets in the scrap foam pieces.

In the corners of the mouth, there is a piece of skin that stretches when the mouth is open. I make these from foam, and hand sand them to fit into the corners in a length that looks good. They don't need to fit perfectly, as you will set them in place using Apoxie Sculpt. Round out the front portion as desired. When satisfied with the shape and thickness, apply three coats or more of Styrospray. When dry, these can be placed into the mouth and secured with Apoxie Sculpt. Let them harden for about 4 hours.

My next step would be to paint the inside of the mouth. You can use acrylic artists paint and mix colors to get the shade you want. Paint the inside of the mouth and the tongue and let dry. When dry, you can glue the tongue in place. I use 5 Min. epoxy for this. Let it dry for about an hour. You may have some places around the tongue that need filling in. I use the Apoxie Sculpt for any filling issues that arise. Make the adjustments with the Apoxie Sculpt and let harden for three hours or more. Now take your mouth paint and touch up the inside of the mouth.

Before gluing in the teeth you need to make the lips. The lips are made with Apoxie Sculpt by rolling out a fairly thin long piece(s). Take a piece about six inches long and starting in the corner of the lower mouth and press the piece onto the edge of the mouth, feathering down as you go on both the inside and outside of the lip. Get another piece and continue to the opposite corner of the mouth. When it looks good, take a butter knife and make some vertical lines in the lips for appearance purposes. Let this harden for a couple of hours and then do the upper jaw in the same manner. When dry, paint the inside part of the lips in your mouth color.

Finally you can set the teeth in. You can use either a slower epoxy for plastic or mix a small batch (about an ounce of Styrospray) and dip the root of the tooth into the Styrospray and set the tooth in place. Use enough glue to seal the tooth in place so there are no gaps or holes in the gums. Now go back with your mouth color and touch up any areas where the glue is showing.

Last step: I like to use Heisman's outdoor polyurethane to coat the inside of the mouth and teeth. This will protect the paint and add a sheen to the teeth and makes the mouth look moist.

THE FINISHING STEPS:

Making toes and claws. You have your choice as to carve the toes and claws on the legs or arms, or carving them separately and gluing them onto the leg or arm. If you choose to carve them while a part of the leg or arm then a lot of measuring and planning is needed, especially when dealing with long bending fingers and curved claws. It is not that difficult when dealing with something like the foot of a Triceratops or Saurapods, as the feet are generally short, wide and blunt. It is **much** more difficult when making a raptor foot or hand. where the toes and fingers are quite long and narrow, with highly curved claws of different lengths.

I prefer to make the toes, fingers and claws separately and glue them on later. This way I can make mistakes and not ruin a whole leg, hand or arm.

Two legged dino's with long toes.

I like to carve the instep part on the leg up to the point where the toes start. I then measure the length of each toe and the claws separately. It is very easy to work with a piece of foam that is only 2 - 10 inches long and 2 - 4 inches square. Shaping is very easy and getting the correct length is simple. When gluing them to the foot, adjusting the angle (splaying) is also very easy. Once glued on, I use Apoxie Sculpt to blend the toes into the foot. This also makes the joint quite strong. Because most toes and toe claws are fairly straight, it is not too hard to carve the claw directly on the end of the toe. An exception is the killing claw on a raptor which is a little more difficult but can be done with a little pre-planning. (The toes, claws, fingers and hand claws on the two Velociraptors in my Gallery are all foam.) The claws on the rest of my carvings are either carved wood or Apoxie Sculpt. In my opinion, claws made from Apoxie Sculpt are the best, as they can be highly pointed and razor edged if desired. Plus Apoxie Sculpt does not shrink, crack or expand due to temperature or humidity like wooden claws may.

Hands, fingers and claws:

While I make my templates showing the hand, fingers and claws on the drawing, I usually end up cutting off the hand just above the wrist area on the actual carving. This is done before the final thinning of the arm is done. The advantage of this is that it allows me to rotate the position of the palms, ie: palms down, palms facing inwards, or up or anywhere in-between. I usually make the fingers separately and sometimes each finger joint separately, gluing them together and filling in any area with Apoxie Sculpt where needed.

Lets assume we have completed making all body parts and have glued them in place. Our carving will still need some fine tuning. With everything together, it is much easier now to visualize how you want the final sculpture to look. You can now add in any indents to simulate muscle or skin folds or rib lines. It is at this time that a flexible cloth tape measure really comes in handy. While I am doing my final thinning I frequently use the tape to measure the circumference at the ankles, shins, at the knee area, the wrist, forearm, elbow and bicep areas. It is nice to have ankles, calves and wrists that have the same circumference.

FILLING IN GAPS:

I use light-weight spackle to fill any gaps or holes. If the gap is deep I take scrap foam, shape it if necessary and push it into the gap and then spackle over it. After the spackle dries, do your finish sanding and prepare to do the covering, either with fiberglass & epoxy resin or Styrospray.

If you decide you want to fiberglass your dino I suggest you buy a how-to book on fiber-glassing or search the NET for articles. It is not that difficult to do but I don't feel qualified to tell you how. It took me some trial and error to learn the process.

I do feel somewhat qualified to explain how to use Styrospray 1000. It is fairly easy to use and can be brushed on, which is what I do. Styrospray 1000 is a two part liquid polyurethane hard coating product made especially to hard coat foam. Part "A" is fairly thin, and Part "B" is like a thick white paint that needs to be stirred frequently, Part "A" does not. They are mixed together in equal portions, mixed well and brushed on. I use throw-away chip brushes from Home Depot or Wal-marts. If you want you can clean the brushes using Toluene or Xylene from Home Depot, but in the long run it is about the same cost to just throw the brushes away. It is nice to have some Xylene around for spills and general clean up. I always use latex gloves when using Styrospray and eye protection! At 70 degrees I have found out that I have approximately 20 - 25 minutes to apply it before it stiffens too much. The most I can mix without wasting it is 4-6 ounces combined at one time. It brushes on like a thick paint. I found that it is best to put many thin coats on rather than fewer thick coats. Thick coats will run and cause hard droplets on your sculpture. It can be sanded easily after it cures, but in the long-run thin coats are best. I have used it without using a primer on the foam and it worked fine. For complete technical data go to www.industrialpolymers.com. At 70 degrees it can be re-coated in about 30-45 minutes. Both of my Velociraptors are finished with Styrospray. Although I did not count the number of coats applied, I would guess I used between 8 - 10 coats. It comes in a two gallon kit, one gallon of each part. I covered both 7 ft. raptors plus heavily coated both wooden bases, and a third base that was about 30 inches square. I still have about 20 % of the Styrospray left and feel that I more than adequately coated everything. The cost is about the same as buying fiberglass cloth and epoxy resin. I am not knocking fiberglass, both methods are excellent and I will use both in the future. For the beginner, I feel Styrospray is easier to use. If I ever make another large dino, I may actually use both at one time. A primer coat of Styrospray then a couple layers of fiberglass and several top coats of Styrospray. Okay, enough about Styrospray. Except for the mixing and timing part, using Styrospray is just like paintingperiod.

Okay, we have now spent two or three days coating the Sculpture. It's looking pretty good, but we still have work to do. We need to put the eyes in, make nose and ear holes, and add any ridges or bumps that we may want. I set my eyes in the following manner. I first trace around the eye at the proper location. The eyes I have been using are 36 mm in diameter and they are half-round. Sometimes I tape the eyes in place and step back and eyeball them to make sure they are even, etc.. I then set the eyes aside and use my dremel tool with both a pointed and flat grinding points. The eyes need to be countersunk into the head, so I first used the pointed tip to grind through the Styrospray or fiberglass and just into the foam. I will then grind away the hard coat up to the inside line of the tracing, periodically stopping and trial fitting the eyes into the shallow openings. Once the eyes fit into the shallow openings, I switch to the flat-top grinding wheel and begin making the hole gradually deeper until I reach a depth that doesn't let the eyes bulge out too much. Be aware that you will be ringing the outside of the eyes with Apoxie sculpt as this will set them in place. I role out a very thin line of Apoxie Sculpt and then use a flat nose screwdriver to push the clay down and into any gaps, and slightly onto the outside of the eye. You can also use your wetted fingers. The water does not hurt the Apoxie. If any Apoxie gets onto the visible part of the eye, you can wipe it off with a wet rag, and later scrape it off with a razor blade. When you're done setting the eyes you can now drill/grind out the nose and ear holes. Again, first draw them on in order to get the correct locations and then drill through the marked locations. I use the dremel again with the pointed grinding stone. Make them deep enough to give an appearance of depth. When done, you can line them with Apoxie Sculpt or coat the inside of the holes with Styrospray. Now go ahead and put on any ridges, lips, eyebrows, eyelids or bumps you may want, etc. Use the Apoxie Sculpt for this and use your wet fingers to feather-out the edges.

Almost done? Maybe, maybe not.

There are only a couple things left to do.

First: Decide whether or not you want to put on some type of skin texture.

All of my current sculptures have some degree of texturing. I use the Apoxie Sculpt and put on each bump one at a time. Very time consuming and tedious. I hope throughout this Web page an experienced foam carver will let me know of a faster, and better way to add skin texture. My technique is after mixing the two parts thoroughly together, I take a small piece about 1/2" round and role it on a table until it is a long string about 1/8' wide. I then use a knife to slice off a tiny piece which a pressed onto the sculpture and feathered down to the surface to form one bump/scale. I try to vary the size and the shape a little each time. Look at the headshot of the closed mouthed Velociraptor on my Gallery page. Hopefully you can see what I'm talking about. This process is very time consuming but I think it makes a world of difference between a textured appearance and simply a flat skin version.

Second: Make a base for mounting the sculpture.

If your sculpture has four legs and stands securely, you may not want a base, it's up to you. If it has two legs then a base needs to be made. The bases I use are 1/2" pressboard or plywood coated / sealed with two layers of fiberglass or 4 or more coats of Styrospray. This is done to protect the wood from the weather and moisture. As far as attaching the sculpture to the base, I simply use a large amount of 5 Min. epoxy. If any gaps remain, I keep adding more epoxy until the feet are sealed to the base.

Third: Paint your sculpture.

I'm not very talented when it comes to painting. So all I use is Krylon Spray Camo paint. It comes in Black, Drk. Brown, Green, and Tan. You can obviously use any outdoor paint and color that you want. Personally I think flat paints look better and are more natural looking than semi-gloss paints do. I have used brush-on and spray paint. I prefer spray paint as it blends the colors better than straight brush-on paints. If you either want or don't mind a somewhat shiny sculpture then coating your paint job with Heisman's outdoor semi-gloss Polyurethane is very good. It protects the paint and all that is needed is to re-coat it every year or two.

Hopefully at this point you now have a large scale dinosaur ready for display and you are ready to start on your next and better Sculpture.

I hope this how-to page was helpful to you. I certainly enjoy making the dinosaurs and I hope you will also.

I would appreciate hearing your comments regarding my dinosaurs and the content of my Web-Site, Please feel free to leave me your comments on the contact form on my Home page.

Thanks for visiting, Rich K.

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