

In the studio of her mountain home in North Carolina, Lisa Sturz (Red Herring Puppets) has mastered the art, the craft, the engineering, the business and the logistics of building larger than life puppets and costume figures and shipping them to her clients for use in parades, museum exhibits, special events and theatrical productions. Her clients include the Shedd Aquarium and the Field Museum in Chicago, the Fort Fisher Aquarium, the Tennessee Aquarium in Chatanooga, Harrah's Casino in Cherokee, NC, the City of Asheville, the Lyric Opera of Chicago, and the Flatrock Playhouse (for which she's created costumes for Beauty and the Beast.)

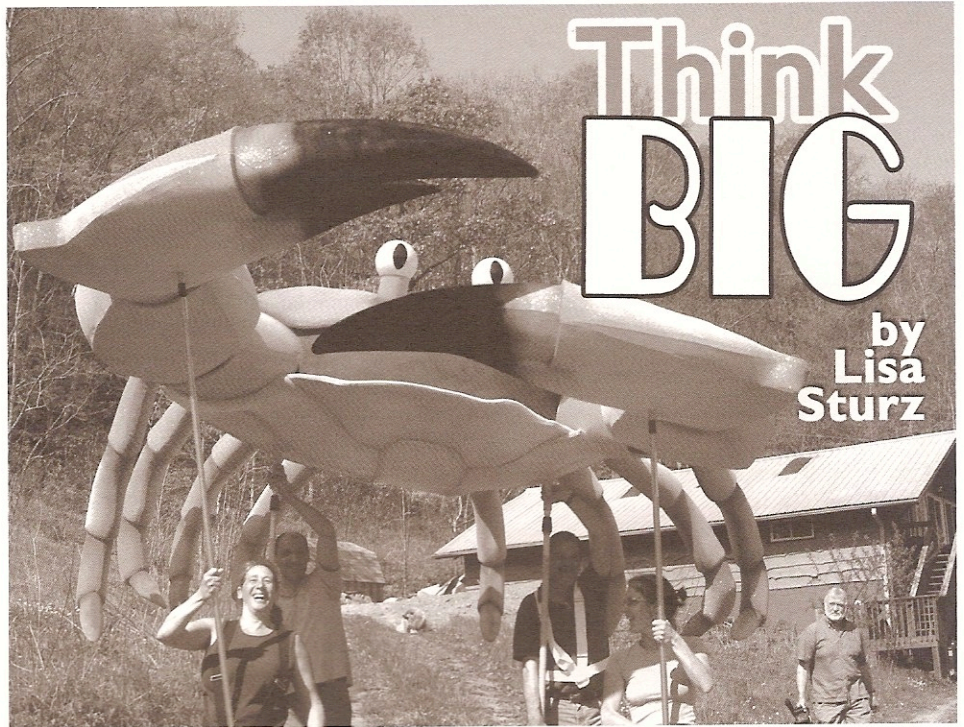
Ironically, I was attracted to puppetry by the pleasure of creating detailed miniature worlds that are hard to produce on a large scale; yet fate has been throwing "red herrings" in my path and I have come to specialize in giant size puppets and costumes. The bigger my studio is, the bigger the projects become and my barn in North Carolina is often full to capacity. Sometimes I work by myself, but when a big job comes, I might hire a dozen people at a time. I find it rewarding to construct larger than life figures that reach a mass audience, and to solve the engineering challenges that seem to grow with the size of the puppet.

GETTING TO KNOW YOU.

Phase One in creating a figure is research. Often the client will send photos, which I supplement with library and Internet searches. I can never have enough photos. I want to discover every angle. I like to read about the animal and their habits to understand why they look the way they do. I often find myself dreaming about the animal. A knowledge of the anatomy helps if there are to be moving parts. Since many of my clients are museums displaying the figures for educational purposes, I need to be accurate. Sometimes I can make up the details as I did when the Cherokee Nation wanted creatures from native legends. Each commission offers an opportunity to get to know a particular species - to take a breath and wonder at the numinous act of creation that I am about to interpret.

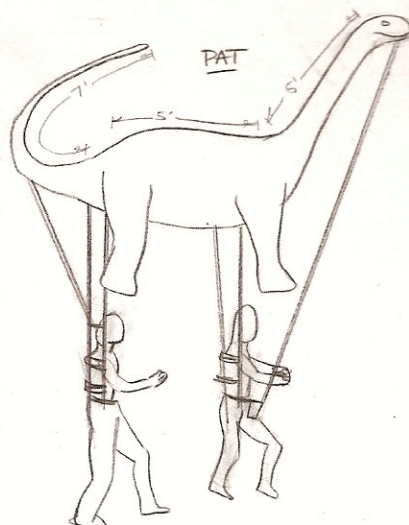
DOING THE MATH.

I draw rough sketches to get familiar with the figure from a mathematical point of view and understand its unique geometry. I decide how the weight is best distributed and where to place the poles to give the puppeteers the most control. I explore the possibilities of moving parts.



I enlist my scale rule to get a sense of the size and weight that is proportional to the number of puppeteers and the size of the venue (and the size of their doors). I think about shipping and the dimensions of the largest truck I can rent. Sometimes I need to plan the figure in sections and assemble it on site. All these things need to be considered ahead of time and all of these things affect cost.

Once the drawings and dimensions are approved, I calculate the materials needed. It can sometimes take 3 or 4 weeks for materials to arrive in my remote mountain retreat so I need keep a stash on hand for emergencies and over order for mistakes. I collect fabric swatches, making sure there is enough

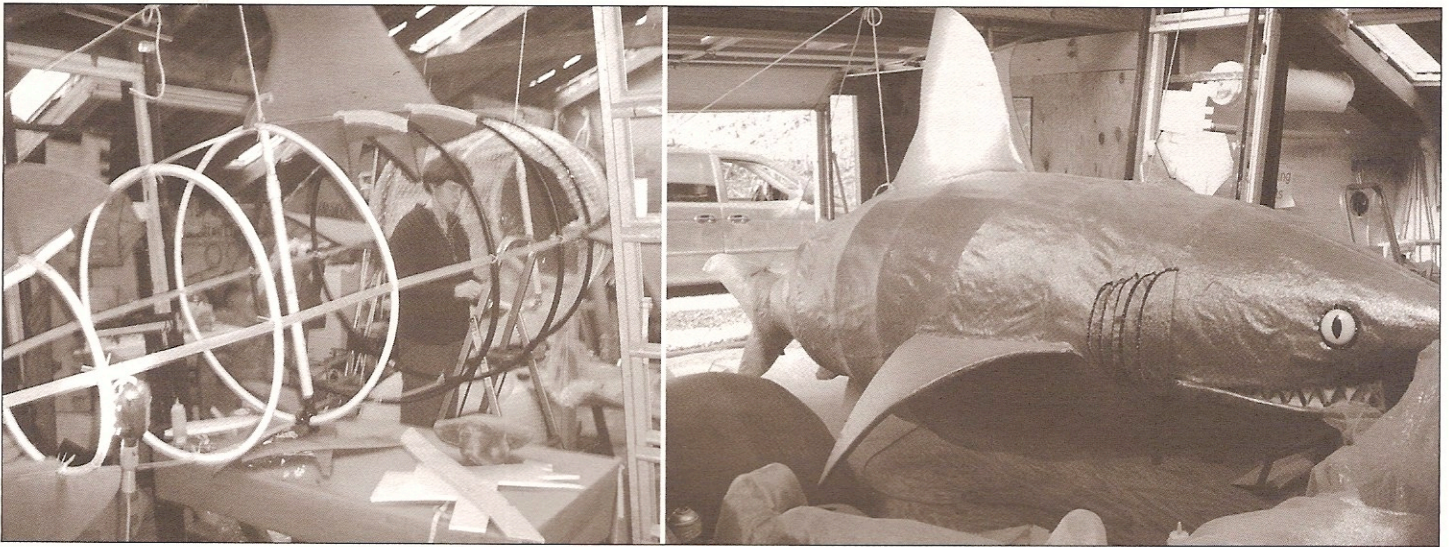


yardage available of the same dye lot before sending samples for the clients to choose. .

I do more math to figure out labor, time and overhead costs. I make charts of every task that needs to be done and how long I expect it to take. I break it down into skill level - what needs to be done by me and what I can delegate to a seamstress, a carpenter, a painter, or a general worker. I break it down into sequence and set weekly goals of when A needs to be completed so that B can happen. I look at the deadlines imposed by the clients and how much time I have for construction. I look at my touring schedule to see how many days I am out of town and determine who I need to hire when and for how long. I calculate salaries, shopping time, studio costs, payroll costs, equipment, and office supplies. And then I add in the contingency factors - the mysterious unknowns that always pop up - the snow storm or power failure, the gas shortage and subsequent rise in the cost of materials, the family emergency, the physical injuries, and the occasional mistake. If I don't do the math well, I might work 80 hours a week for two months and lose money - so math is a big part of the equation.

LIGHT and LIGHTWEIGHT.

I look for materials that are lightweight and structurally sound. Most of my large figures are hollow with a skin of mini-cell foam and a skeletal structure of aluminum, rope and plastic. I create the form by drawing flat paper patterns that are transferred and cut out of foam and glued together. I've been known to use Ethafoam tubing for long extensions, pigmented bubble wrap for large moving tentacles, open cell foam to connect



Emily Lower working inside the belly of the shark. Photograph by Lisa Sturz.

moving parts and shape facial details, and cast neoprene for repetitive small pieces like teeth or claws. For the outer covering I like thin fabrics that have texture or iridescence (especially for underwater species). Often the puppets are paraded outside so I choose fabrics that sparkle and change with light. Since the puppets are big, the scale of any pattern in the fabric also needs to be big or it will read as a solid color from any distance. I try to avoid fabrics with a noticeable nap, as it is easy to make a mistake (studio light is different from sunlight) especially when there are several people working on the figure at one time.

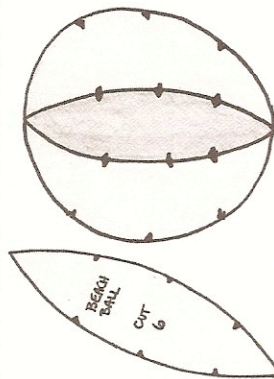
INNER STRUCTURE.

The internal structure distributes the weight, supports the shape and integrity of the form, and creates a housing for the rods that will be used to manipulate the figure. Hollow aluminum painter's extenders work well for rods and have the advantage of adjusting in height and screwing into the housing for easy removal. Because the figures are so large, we prepare a sheath for each of the rods so that the connecting point is protected on the inside of the puppet. We attach a large screw eye to the top of the housing so we can hang the figures from pulleys while they are being worked on and to use later for storage. The sheaths are attached to the aluminum structure with nuts and bolts, hose clamps, and electrical ties. The points of contact are reinforced with aluminum or plastic hoops that create ribs for the structure and lock all the elements together. The inner structure is planned at the beginning, but I don't actually create it until the basic form is mostly put together so I can make sure it fits exactly right. I don't glue the head and legs to the body so I have access from which to install the structure. There is a lot of give and take

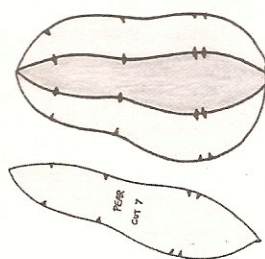
between the structure and the form to get it to fit exactly right and sometimes I need to make alterations before moving on to the next phase.

APPLES AND ORANGES

Creating paper patterns is a kind of alchemy - a mixture of physics, math, art, and faith that transforms a flat piece into a three-dimensional form. I first look for the basic shapes - the circles, tubes, triangles and cones that compose the whole. By breaking it down, I have a place to begin. If there is a big round belly, I create a circle and then go from there. A good illustration of this is the multi-colored beach ball. The pattern is the individual colored panels, which are shaped like an elongated symmetrical leaf when laid flat. When this pattern is repeated six times and attached together, it forms a ball - or an orange.



You can change the orange into an apple by tapering one half of the leaf pattern so one side of the circle is longer and thinner (and it is no longer a circle). If you push the thin end into the center, you will have an



apple. If you are in the mood for a pear, you can elongate it and taper the top half (sort of like the apple without punching the center in, but not exactly). The trick is knowing just how much to taper and elongate, keeping in mind that the three dimensional shape consists of several pieces. If you have 6 pieces and you trim the pattern symmetrically on both sides, 1/4" becomes a 3" difference. With practice you can predict exactly how to shape the pattern. There is a mathematical reality that allows one to adjust the size and the volume. I sometimes draft the figure in full scale and use a tape measure to figure out curves and volume; but mostly I tap into an intuitive understanding of size and shape that has been sharpened by years of experience.

Another trick is to key the patterns like a dressmaker does. Foam, like fabric, is a bit pliable and can shift in the construction process, so by notching the pattern, you can make sure the shape will go together smoothly. For a symmetrical shape I fold my pattern in half down the center when I draw it and cut it out to make sure it is identical. I make my notches with it folded in half to assure the overall symmetry. When the shape is not symmetrical, I use a fairly elaborate system of notches and double notches that help me identify the front and back and allow me to put the piece together like a jig saw puzzle.

I've invented a kind of shorthand on my patterns to indicate what type and thickness of foam to use, how many pieces to make, if the pattern piece needs to be reversed for a second piece, whether to cut the foam straight or on a bevel, and if we need to compress a larger piece to fit with a smaller one for a particular sculptured effect. If the pieces don't fit together according to the plan, there is a mistake somewhere and we can correct

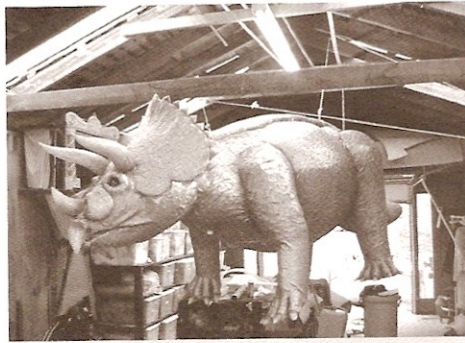
it before it gets very far along. The folks who work with me are trained to be fluent in pattern language. If it is a very complicated form, I sometimes do a small mock-up in a low-grade upholstery foam. I put it together with the notches on the outside so if I need to make adjustments on the pattern, I know exactly where to do it. The mock-up is also useful if a client needs to see it for approval. .

KEEPING IT ALL TOGETHER.

Glues have different chemical properties, drying times, adhesive value, and compatibility issues with each other and the various materials. For gluing the foam together I use an MEK based contact adhesive designed for shoe repair. (This stuff is very toxic to breathe so never use it in an enclosed space.) My studio has a glue room with an industrial fan sucking out the bad air (or sometimes we work outside and watch the clouds pass over the mountains). My favorite brand is Masters, but there are many others such as Barge Cement, Duall, and Colle. This glue is applied evenly to both surfaces, allowed to dry for 5 - 10 minutes, and then joined together. It is very strong glue, but will sometimes separate with extreme heat. For this reason, I cover all my foam seams with muslin strips applied with spreadable latex for extra protection. When you work this hard on something that will often travel across the country, you don't want it to fall apart. .

I use a two-part PVC glue to hold plastic piping together, Gorilla glue (a water activated polyurethane foam) to fill gaps and secure plastic and PVC to the foam, and metal epoxy to secure nuts and bolts. I use spray adhesives to keep the fabric overcoating secure to the form (certain brands will bleed through the fabric so it is always worth a test) and Fabric-Tac, a vinyl adhesive to tack down the edges of the fabric where stitches won't hold and to secure trim around the eyes. I use Sculpt & Coat, a flexible compound of glue and grit, to coat foam if it is exposed like on teeth or toenails. I build it up in several layers often combined with a base coat of paint.

I have two overlock machines to finish fabric edges and serge fabric pieces together, and several regular machines as well for internal sewing and appliqué. We tailor as much as we can with machine, but there is always a lot of hand sewing at the end. I prefer surgical curved needles (sharp and to the point) to stitch over round surfaces and I insist that all of us knot our threads every few inches so if a thread becomes loose, the whole seam doesn't disappear. I have several low stools on wheels that we use



to slide under the figures and sew underneath.

THE "EYES" HAVE IT.

I once took a personality/career test and the results indicated that I would make a good rabbi or priest. This makes me chuckle when I think about the origin of puppetry in religious ritual and of the Indonesian shadow theatre specifically, where the priest (dalang) performs with the puppets. Before the puppet is completed there are specific rites that accompany the carving of the eye, which endows the figure with life and con-

nects it to the ancestors. I think about this every time I work on the eyes. I just can't help it. From this moment on the figure has a personality - the whole tone changes because now the figure is looking at us and seems to have an opinion. It's usually about now that we give it a name.

On a mundane level I often use clear plastic domes and paint them on the inside for protection. By doing this, the outer plastic shell acts as a lens and reflects light. With large figures I buy plastic light globes (which are hard to find clear so I often need to paint the outside).

TEST DRIVE.

Before we add the finishing details, we take it out for a ride. The moment of truth comes when we screw in the poles and take on the weight. I encourage the client to purchase flag holders with double straps to support the poles. Sometimes we construct a special backpack. There is much awkwardness in the beginning before we figure out who needs to take the lead, and how to work together to manipulate moving parts. We have a practice drill and take notes. My husband, Francois, is usually the one to captain the load in and drive the truck. We try to schedule a training session with the client when he arrives.

SAYING GOOD-BYE.

It's almost done and we can taste the excitement. We've been working hard and now we give it some last minute detail and basic finesse. We airbrush dimension and highlights onto the figure so it doesn't look like a giant piñata. We add trim around the eyes and insert the teeth and tongue. We walk around taking out stray pins and touching up the paint. We take a few pictures and then prepare the truck with pulleys and foam to keep the figures clean and well balanced during transit. Loading the truck properly can take several hours and lots of rope and bubble wrap. We send it on its way and start sweeping the floor.

Lisa Aimee Sturz has been a puppeteer for thirty years. She has performed with Jim Henson Productions, Lucasfilm, PBS and created puppets and props for Walt Disney Imagineering, the Ice Capades, the Mark Taper Forum, and many more. Film and television credits include Murphy Brown, Puzzle Place, Elmo in Grouchland, Muppets in Space, the Flintstones, Howard the Duck, Ninja Turtles III, Batman II, and Fir in the Sky. She is Artistic Director of Red Herring Puppets, a professional touring puppet company. www.redherringpuppets.com Photos this page: Barbara Browning Photography

The Gallery

LISA STURZ THINKING BIG

TOP RIGHT:
Tyrannosaurus Rex, King of
the Studio.
Created for the Field
Museum in Chicago.
Photograph by
Barbara Browning Photography



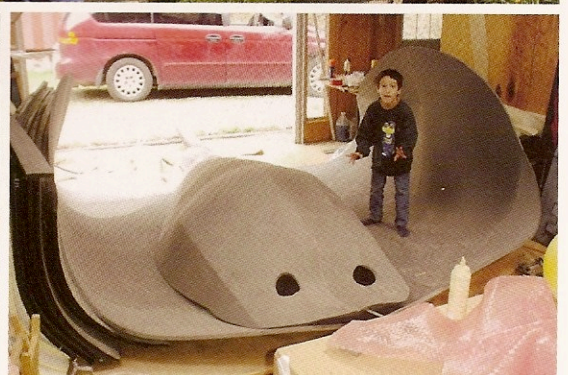
CENTER RIGHT:
Crab Walk.
Created for the Shedd
Aquarium in Chicago.
Photograph by
Barbara Browning Photography



BOTTOM ROW:
Left: Giselle Kovac adding
a finishing touch to a crab
pincer.
Photograph by Lisa Sturz

Center: Debbie Cochran
covering the octopus with
bubble wrap.
Created for the Shedd
Aquarium in Chicago.
Photograph by Lisa Sturz

Right: Theo Sturz inspecting
his Mom's work.
Ray created for the Shedd
Aquarium.
Photograph by Francois Manavit





(LISA STURZ, THINKING BIG)

Triceratops on its way to the Field Museum in Chicago
 Photograph by Barbara Browning Photography



Lisa modeling the foam structure for a teapot costume, Mrs. Potts, for the Flatrock Playhouse production of Disney's "Beauty and the Beast" (Scene below)
 (Lisa photo: Francois Manavit)



Linda Edwards as the Teapot, Holly Rone as Belle, Chris Lynn as the Beast;
 Production photo by Treadshots.com



Lionfish created for the NC Aquarium at Fort Fisher
 Photograph by Jacob Rudolph



Betty Bisson as Madame de la Grande Bouche backstage at the Flatrock Playhouse production of Disney's "Beauty and the Beast".

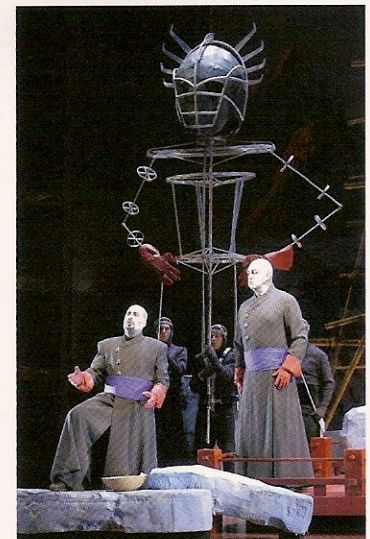
Photograph by Wendy Lawrence.



T-Rex, aka "Sue", celebrating her birthday at the Field Museum in Chicago. Photo ©Field Museum



From Wagner's "Siegfried" Siegfried (John Treleven) embraces the fallen Fafner (Raymon Aceto) as the giant falls in the background. Giant designed by John Conklin (with Scott Marr and Lisa Sturz;) Puppetmaster, Lisa Sturz



From Wagner's "Das Rheingold" Fasolt(Andrea Silvestrelli) and Fafner (Raymon Aceto); Giant designed by John Conklin; Puppetmaster, Lisa Sturz

Both operas productions of the Lyric Opera of Chicago; Photographs by Dan Rest