

## MANUAL CINEMA

### The Maker's Guide to Cinematic Shadow Puppetry

MANUAL CINEMA is a performance collective, design studio, and film/video production company founded in 2010 by Drew Dir, Sarah Fornace, Ben Kauffman, Julia Miller, and Kyle Vegter. Manual Cinema combines handmade shadow puppetry, cinematic techniques, and innovative sound and music to create immersive visual stories for stage and screen. Using vintage overhead projectors, multiple screens, puppets, actors, live feed cameras, multi-channel sound design, and a live music ensemble, Manual Cinema transforms the experience of attending the cinema and imbues it with liveness, ingenuity, and theatricality.

Manual Cinema practices a form of puppetry that we like to call *cinematic shadow puppetry*. A hybrid of theater, film, and puppetry, our process marries ancient principles of shadowplay with modern cinematography. It was developed using an instrument that is familiar to many seasoned shadow puppeteers: the old-school overhead projector, which allows us emulate the functions of a film camera and create cinematic *montage*. Most Manual Cinema performances integrate hundreds of paper shadow puppets and colored slides with actors performing in silhouette.

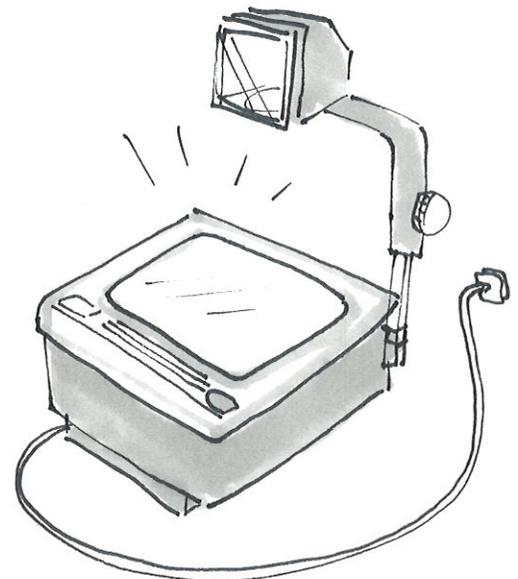
Manual Cinema's work typically eschews dialogue and spoken narration in favor of visual narrative storytelling marriage with intricate sound design and music. However, there are many ways to integrate this art form with language!

The following guide is a crash-course in how to create your own shadow puppet cinema. It's by no means exhaustive, but it's enough to get you started!

### WHAT YOU'LL NEED

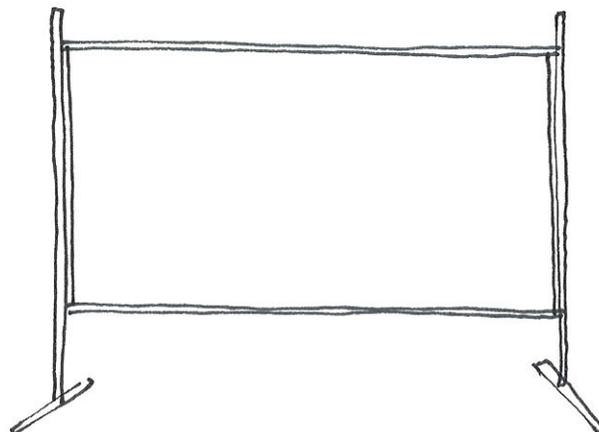
#### 1) Overhead Projectors

At the heart of Manual Cinema's work is the overhead projector. You can create simple effects with just one overhead projector, but to create the effect of cinematic editing you'll want at least two. We buy most of our projectors on eBay or Craigslist at prices ranging from \$50 to \$250 each. It's best if all your OHPs are the same model because you want them to share the same throw distance and light quality. Manual Cinema's favorite OHP is the 3M 9100. The bulb you'll want is the ENX 86V 360W (about \$8/each).



## 2) Projection Screen

There are many different fabric materials you can use for your projection screen -- the most important factor is that it is a rear projection fabric. The cheapest material is muslin fabric, which can also be purchased in a large format if you'd like a big screen. You can also use a material like vellum, though it is typically sold in smaller formats. Manual Cinema uses a synthetic dual projection screen made by DaLite, a company that specializes in projection screens. Our standard screen size is about 8' wide by 6' tall. If you want to get rid of your "hot spot" -- the bright light from your OHP that shines through the other side of your projection screen -- you'll want to invest in a more expensive material.



## 3) Transparency Film

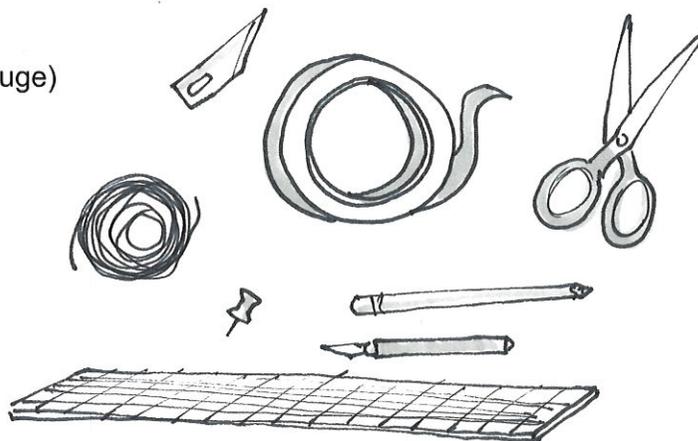
Transparency film is getting harder to find these days, but it's still available at certain office supply stores, including FedEx Office (and it's much cheaper to order online). Manual Cinema uses a special brand of 8.5" x 11" transparency that can be used in laser printers, but there are many different kinds of transparency film that can be used for different media (more on that below). You can also buy non-printable transparency film in large sizes or in rolls at your local art store.

## 4) Paper

Manual Cinema uses two different kinds of paper to make our shadow puppets: railroad board and card stock. For puppets with intricate detail, we like to use card stock because it's easy to cut. The downside is that, without reinforcement, your shadow puppets may wilt or tear easily with use. Railroad board is an inexpensive poster board that bears more weight and is great for shadow puppets that will see a lot of "action," and it's sold at almost all Blick art supply stores. The downside is that it's more difficult to cut and small detail will easily fray.

## 5) Other Tools

#11 X-Acto Blades, X-Acto Knife  
Galvanized Steel Wire (.41 mm / 28 gauge)  
3M Blue Painter's Tape  
Scissors  
Push Pin  
Cutting Mat  
White Colored Pencil



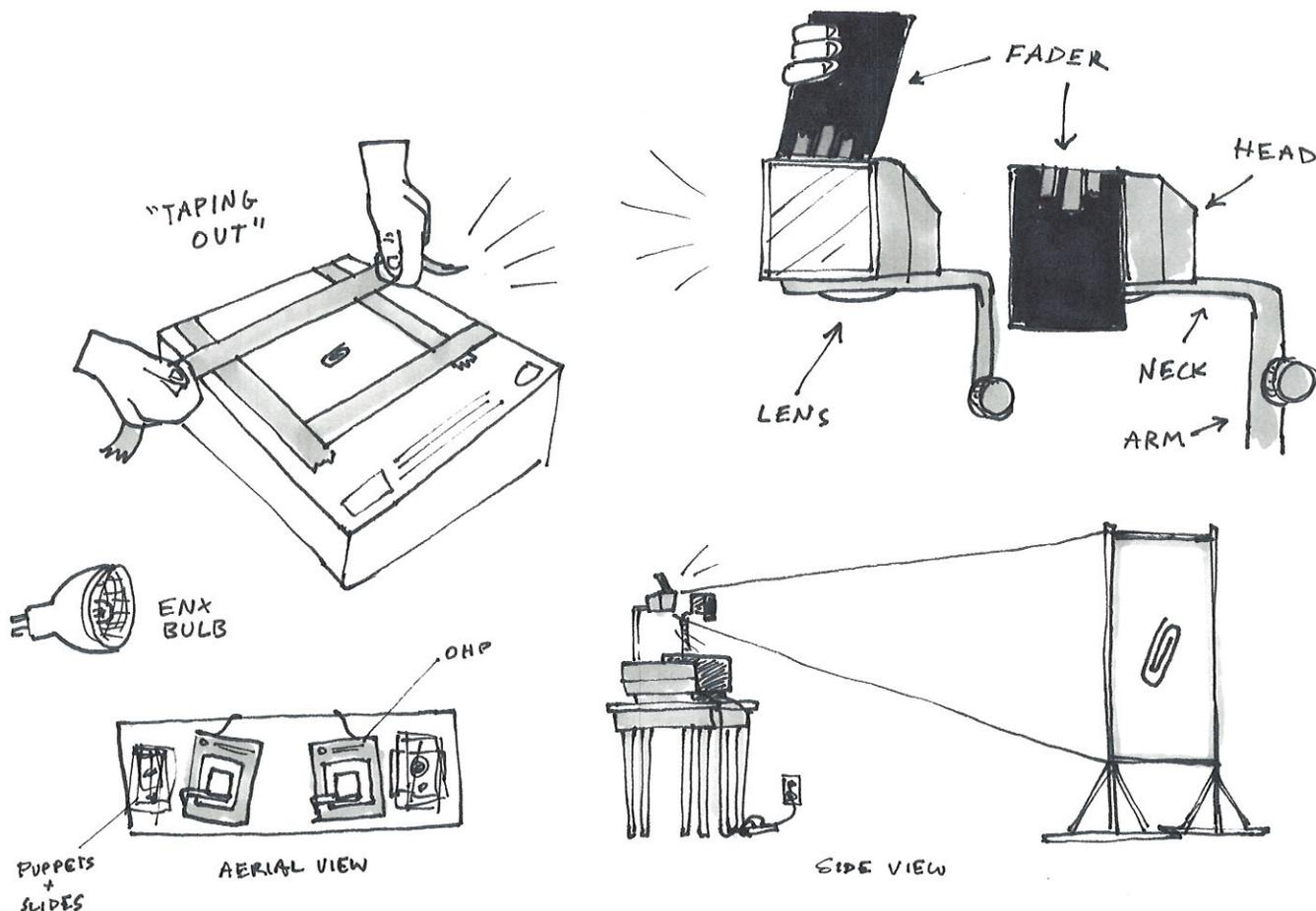
## PREPARE THE PLAYING SPACE

Place your overhead projectors on a sturdy table. Center your overheads on the table, then center the table to your screen. Turn on the projectors and aim them so that the light fills your projection screen.

Note: it's important that both of your projectors use the same kind of lens. There are a few standard lens sizes, and each of them will give you a different throw distance. Manual Cinema uses "wide-angle" angles because they maximize projection size over a small distance, but what's more important is that all your lenses are the same.

Next, place a coin or paper clip on the glass and use the side knob to focus the projector until the edges of the shadow come into clear focus.. Next, take some Blue Painter's Tape and "mask" the excess light by taping the border of the OHP glass (it's a lot like adding barn doors to a lighting instrument). Your OHPs shouldn't be throwing any excess light past the screen.

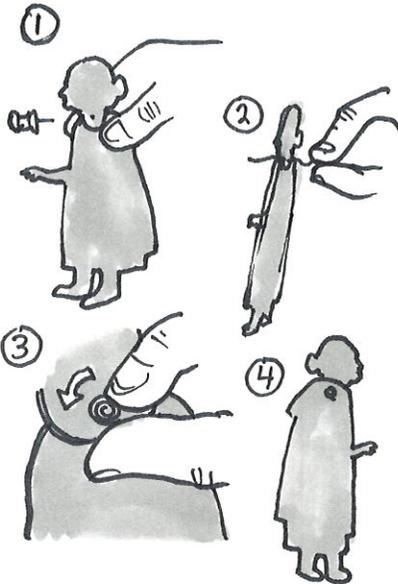
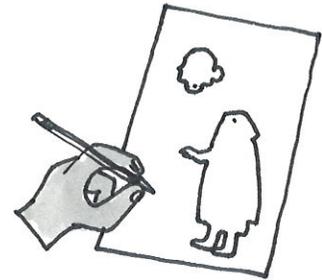
Finally, take some railroad board and cut a 4" x 6" rectangle. This is your "fader." Tape the fader to the front of your projector head. It should be secure enough that it won't fall off, but loose enough that you can easily "open" and "close" it. These faders will allow you to "cut" or "fade" from one image to the next.



## DESIGNING AND MAKING SHADOW PUPPETS

Traditionally, puppets are designed for a maximum range of manipulation, with the goal of allowing a puppeteer to express a wide range of expression and action. Manual Cinema's shadow puppets are designed to function a little differently. Instead of making 1 puppet that can perform 100 actions, we make 100 puppets that each perform only 1 action. Furthermore, each of these shadow puppets is meant to be designed for a different kind of shot: close-up, far-shot, etc. Like an animated film, this requires us to write and design our stories in advance using a storyboard. Once we're satisfied with our storyboard, we can begin crafting the puppets the story calls for.

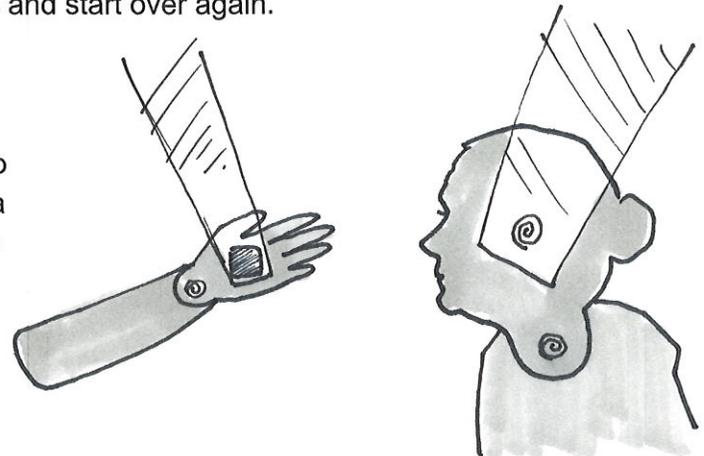
To create a shadow puppet, we first sketch the design on a piece of card stock or railroad board. If you'd like limbs or parts that move, be sure to sketch your moving parts as separate shapes. (If you're using black stock, you can use a white pencil to clearly see the design.) It doesn't matter what color your paper is because the overhead will read any color as shadow.



Next, we use an #11 x-acto blade to cut out the design (a sharp blade is best because a dull blade can slip and injure your fingers).

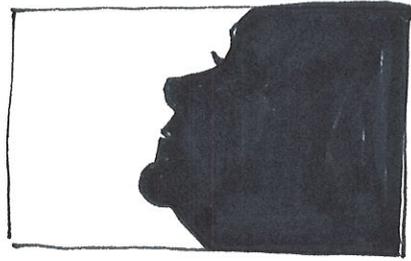
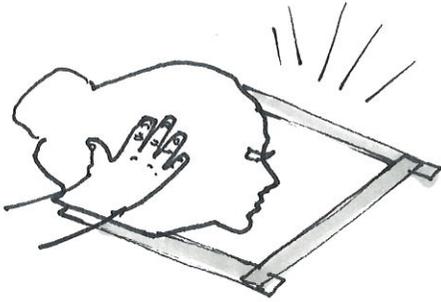
If you've got parts that you need to hinge, hold the parts together at the desired hinge point. Use a thumbtack to poke a hole through both parts at the hinge point. Then cut a small (no longer than 1") piece of steel wire, and thread the wire through the hinge. Then, using your fingers, wrap or curl the excess wire into little spirals on both sides of the hinge. You can press both sides of the wire at the hinge point to secure it (using your finger or a pair of needle-nose pliers). If you decide later that you'd like to change your hinge point, it's easy to "unwrap" your wire hinges and start over again.

To animate your jointed limbs, cut a long strip of transparency film (about 0.25"-0.5" wide). Attach one end of the transparency to your moving part, using either blue tape or a wire hinge (we prefer to avoid glue because it's easier to make changes to puppets that are taped or wired).

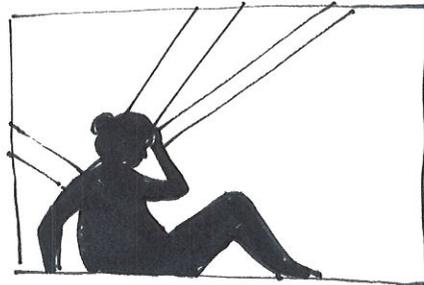
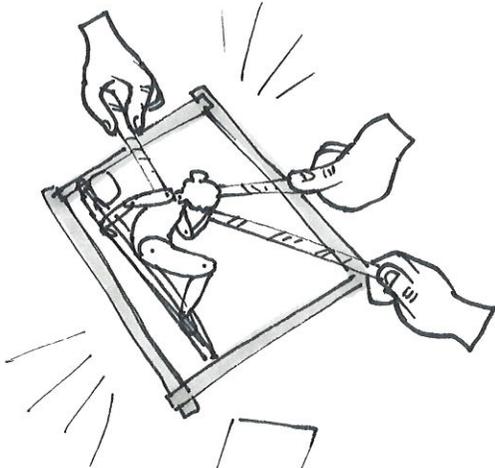


Depending on what you want your puppet to do, you can use additional transparency to “base” your puppet on a background, or use thin wooden sticks to animate it. Here are three different kinds of shadow puppets for three different kinds of shots, all of which use a different method of fabrication and animation:

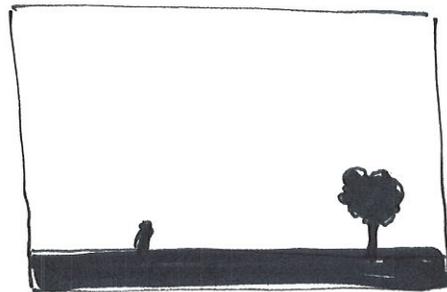
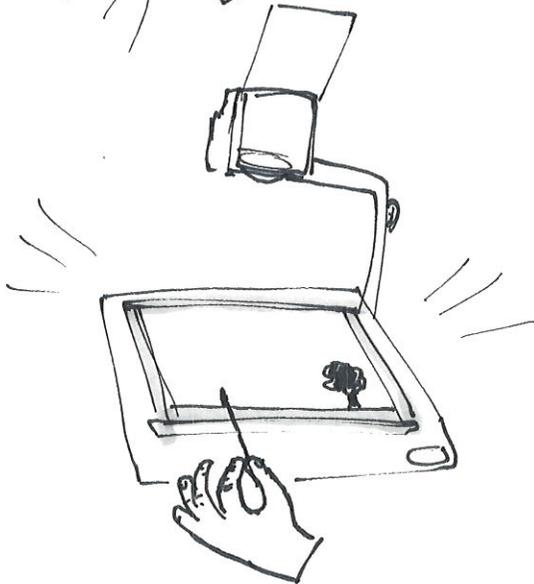
### Close-Up



### Medium Shot



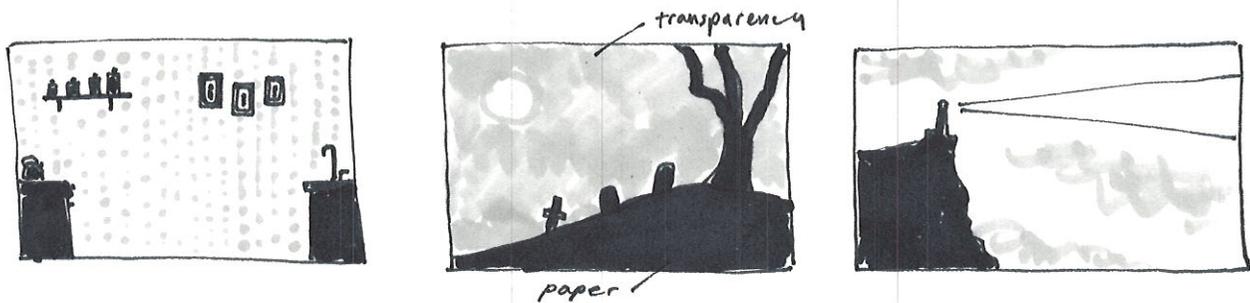
### Far Shot



## SETS AND BACKGROUNDS

Another important aspect of Manual Cinema's cinematic shadow puppetry is the environment in which our puppets act out the story. In a theatrical context, we would call this the set design; in Manual Cinema's terminology, we call this simply the background.

Each of Manual Cinema's shadow puppets are paired with an illustration that makes up the background. Often, the puppets are mounted directly to the background, or manipulated on the top of the background. That illustration can be made out of paper, or a printed color illustration, or (more frequently) a combination of cut paper and printed illustration.



To make a printed illustration, Manual Cinema first illustrates a setting. This can be made using hand-drawn means (pencil, ink, watercolor) or digital means (Photoshop, Paint, Illustrator). Eventually, you'll want to scan or save your illustration as a digital JPG or PDF. If you have a laser or inkjet printer that supports printing on transparency, you can print your designs out directly onto the transparency film. (Check your printer's instruction manual to make sure that it supports transparency, and make sure that you have the right kind of transparency film! Transparency can be made for either inkjet or laser printers, but you don't want to use the wrong kind of transparency in the wrong printer.) If you don't have a printer that supports transparency, you can get your designs printed at your local copy shop (FedEx Office, as of this writing, still supports printing on 8.5" x 11" transparency).

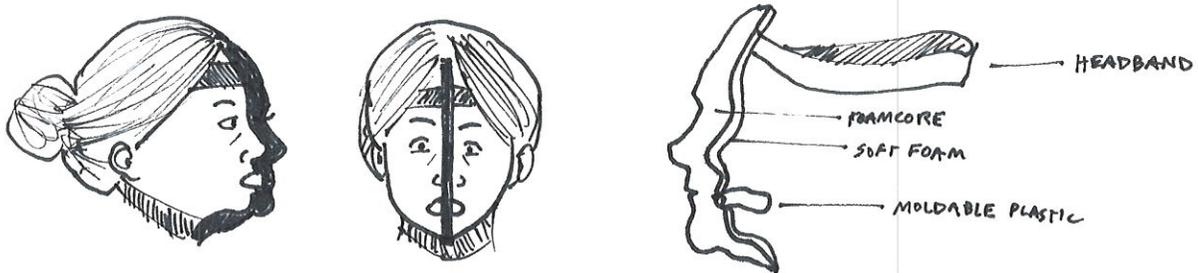
Note: If you don't have access to digital technology, there are transparent paints, ink, and gels available that will allow you to paint directly on your transparency film. Manual Cinema prefers getting the final design digitally printed because these backgrounds tend to last longer and will scratch/smear less readily.

## LIVE ACTION SHADOW WORK

The last type of shadow puppet we use is created by the human body itself. Most characters in our stories are represented using both shadow puppets and actors performing in silhouette. Both the actor and their corresponding puppets are costumed and designed to look identical. (Usually the actor is costumed first and serves as a model for the puppets.)

Each shadow performer wears a shadow mask designed for their character. Manual Cinema's shadow masks are made from a thin strip of character silhouette cut out of foamcore and fixed

to the center of the actor's face. The space between the actor's face and the mask is padded with soft foam affixed with hot glue so that no light can shine through and ruin the silhouette. The top of the mask is fixed by an elastic band around the head. The bottom is fixed inside the actor's mouth using a bit made from ShapeLock moldable plastic.



To make a more simple, inexpensive shadow mask, simply cut out the face of your character on railroad board. (Make sure it will cast a shadow slightly bigger than the shadow of your actor.) Then, attach your design to a loop of cardboard or elastic fabric. Your actor can wear the shadow mask on the side of their face, creating a seamless silhouette with their own body.

Just as every paper shadow puppet is paired with an illustrated background, you must also pair your shadow performer with a background. Make sure to design your environment in proportion to the size of your performer's shadow (this is harder than it looks)! Give your shadow performer elements of the set that move: moveable drawers, cupboards, windows, and doors are especially satisfying to see animated!



## **EXPERIMENTATION AND IMAGINATION**

These are concepts, techniques, and materials that have helped us create our work, but they're by no means exhaustive. The best way to learn this kind of shadow puppetry is through sustained play and experimentation (that's how we did it) and we're constantly discovering new ways to use paper, transparency, and overhead projectors. Happy exploring!