EXPERIMENTAL ANIMATION TECHNIQUES

MARGERY BROWN

CUTOUT ANIMATION

Cutout animation is the simplest way of using drawings to create action.

- Cutout work, where the action of animating is done directly under the camera, carries a high personal charge. It is in a sense miming, since the animator is using only his or her judgment and experience to achieve the action. The great master of cutout, Yuri Norstein, was once asked to what extent he used electronic controls on the special rostrum he had made for himself. He rejected them completely, and to explain why, he made an eloquent gesture, tapping his forehead and running his finger from there down his own arm to his hand.
- This direct connection between brain and hand is the spirit of cutout animation. There are two other advantages for a solo animator.
- First, you need many fewer drawings; the pieces that make up a single figure can be used to create movement that might require hundreds of drawings and cels.
- Second, the cut out pieces are likely to be designed and made by the animators themselves.
- The range of subject is almost as wide as for any animation technique, stretching from robust gag-based action to something as delicate and sophisticated as Norstein's, "Tale of Tales"**.** It is true that there are limitations.
- Fluid movement, particularly in perspective, is not easy to achieve with flat puppets, and cutout will not usually sustain lengths of more than five minutes.
- Close-ups of faces don't work well, which makes dialogue requiring lip-sync less common, though it is achievable.
- A mimed story is most typical.

CHARACTERISTICS OF CUTOUT

Even if you take great care manipulating the cutouts, the control of movement will never be as fine as it is in full cel animation and the action should be planned with that in mind.

- Firm, rapid movement with judicious pauses is the characteristic of cutout.
- It also lends itself to frantic, chaotic, continuous action, where the vagaries of some of the pieces can be absorbed in the confusion.

SIMPLE CUTOUTS

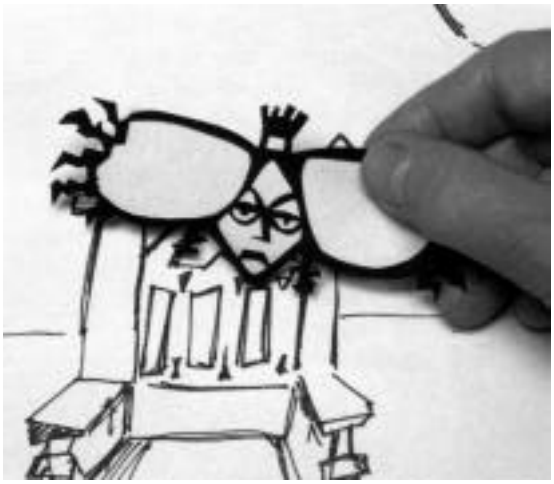
The simplest figures to make and use are silhouettes made from thin black paper. These were not pre-drawn, but cut directly with a knife, using Ingres type paper, which is thin and completely opaque.

- Cutting shapes directly with a scalpel.
- Simple cutouts can be ripped over, using both sides so that the same profile head, or arms and legs can be used facing either left or right. A film with black silhouette figures is clearly capable of only a limited color range. Black on white, the obvious one, can be extremely effective for some purposes. It is possible to use other ground colors, but they have to be on the light side, and the background elements used to indicate a scene must be kept to a minimum so they do not conflict with the outline of the character.

OPENWORK CUTOUTS
In this extension of the silhouette technique, the paper is cut within the main shapes to give a woodcut effect similar to traditional Chinese paper-cuts. The disadvantage is that these openwork pieces have to be backed with paper of the same material as the ground color to avoid problems when arms cross the body or the figure passes across something else-either another figure or a part of the background scene.

- Cutting an open head gives an opportunity for more decorative detail than plain silhouette.

- Backing paper shaped to provide filling for the open shape and avoid confusion with the background.



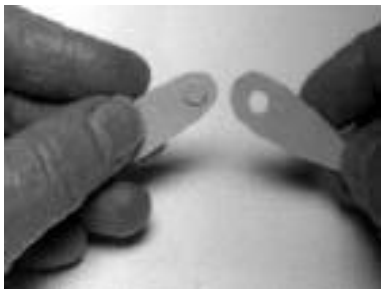
There are two things to try to avoid. One is water animation, where a sea or river occupies a large part of the frame. Unless it is to be represented as static, water requires constant animation, at least every other frame, and since it is going to be merely the setting for the main action, it brings an unrealistic burden of labor for a secondary item. The other problem area is bird flight, which also requires perpetual movement as well as three dimensions without perspective; this animation will soon become tedious.

METHODS OF JOINTING
It is possible to work with all the pieces free and separate, but they are easier to manage without jitter in the movement if the limbs are jointed. A full set of pivot joints including jaw can be achieved. Complete figures have to be made for left and right profiles and for any changes in hand or foot aspect.

- Thread for the joints can be tied into a knot large enough to prevent it from pulling through the base.

- A finished puppet, with the finishing knots on the underside, is capable of movement limited to the silhouette of the figure.

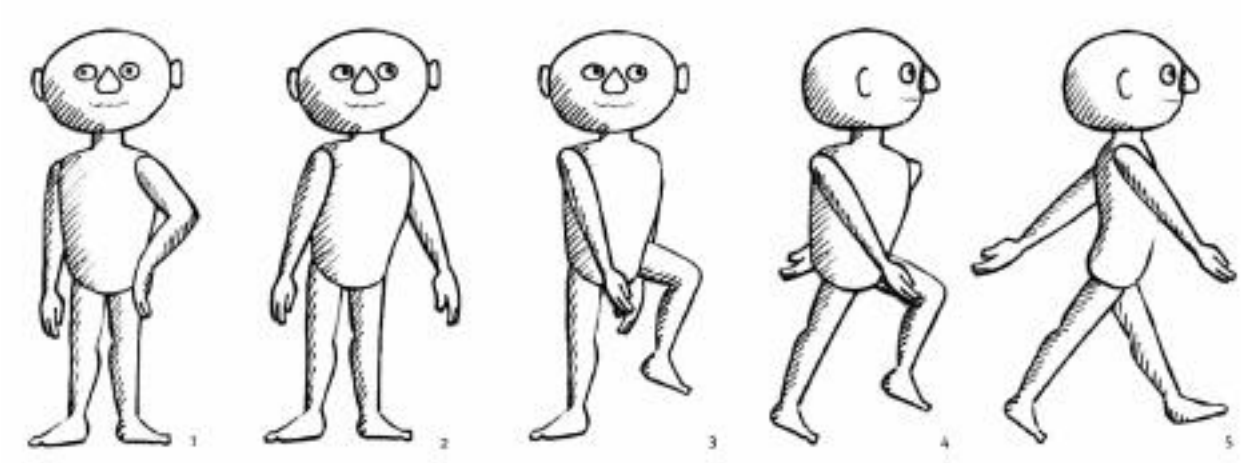
Flat paper can be jointed either by sewing through the paper, thin card or plastic, or by making a flat paper pivot joint, as shown.


- A plug punched from one half of the limb is glued in place on the other half.
- The limb piece with the hole fits over this glued pivot.
- A small piece of paper is glued to the pivot to prevent the pieces from coming apart.
- The pieces now rotate freely.

LIMITATIONS OF JOINING

- With a fully jointed figure, it would be impossible to soften the transition from position (1) to position (5).
- By keeping the elements loose you can create a form of in-betweening.
- In (2) the right arm is brought in front of the body to suggest a turn of the torso, and the eyes begin to move as a lead to the movement.
- In (3) the left leg piece is changed for a bent leg, and the right arm comes further around.
- In (4) the direction of the right leg is reversed and a new profile introduced.
- This prepares for the substitution of the side-on body to complete the action on (5).



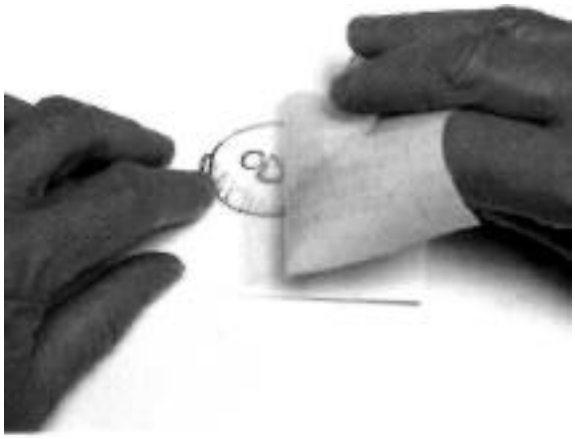
MANIPULATING CUTOUTS

- Since fingers tend to be both clammy and relatively clumsy, tweezers are the ideal tool.
- Two pairs of tweezers are best, as you can use one to hold down the bits you want to stay still, and with the other you can push or pull the moving piece.
- With a small number of basic elements, an illusion of three-dimensional movement can be created.

WEAR AND TEAR

- Paper is naturally fragile, and constant use of tweezers and adhesive can make the pieces look very tired.
- One way to prolong the life of colored paper pieces is to cover both front and back surfaces with transparent adhesive film. This protects the color and design of the front, and gives a back surface to which you can apply and remove adhesives such as tape without damaging the paper.

- You can draw on the plastic-covered front surface to add further features, and if you use wax pencils the additions can be wiped off afterwards.



- A patch of self-adhesive film is applied to the cutout piece, smoothed down as the backing paper is withdrawn.
- The adhesive film is burnished to avoid bubbles and then trimmed to the shape of the piece.
- Eyes and mouth expressions can now be added, and altered, with wax pencil.

ANIMATING WITH CUTOUTS

The rostrum set-up for cutout is the same as that for cel animation, the only small variation being in the use of the pressure glass. In some cases cutout animation does not need a glass over the artwork, but the heat of the lights may cause papers to curl, and cast irritating shadows. Usually some form of glass is desirable, but it may be a loose glass rather than the fixed platen of the standard rostrum. As with drawn animation, concern is to move only those things that are to be moved, and a screen full of pieces of dismembered paper - supposing that there are several characters moving at once - clearly presents some problems.

There are various solutions

- One is to separate the characters with layers of cel, but even so you will have to remove and replace the upper layers to move the underneath pieces.
- You can stick down the pieces, using either adhesive spray or double-sided tape to attach the static parts of a character to a cel level, and trust to luck with the loose parts. The disturbance caused by pulling a firmly stuck piece off when the time comes to move it may, however, be greater than desirable.
- Jointing is another method, though what this gives in control of a figure's constituents is offset by the limitations it brings.
- Magnets are sometimes used. Of the various magnetized boards available, the simplest to adapt for cutout animation is a sheet of magnetized rubber-a piece of stiff rubber about '/4-inch thick which has been impregnated with a magnetic oxide. The sheet is laid on the rostrum table, and the background with a protective cel is laid over it. A small piece of 1/4-inch recording tape-itself a magnetized substance-can be taped to the back of each cutout piece. Thin iron foil is better, if you can get it, but aluminum foil is no good. The pull of the magnetic rubber, while very strong in direct contact with pure metal, is modified by the intervening layers of paper and cel, and exerts only a weak pull on the cutout. It is enough to stop the paper cutouts flying about too freely, but not so strong as to make it a disrupting effort to move them.
- For almost all cutout work it is desirable to put a cel level over the background to protect it while handling the figures. If the background is to move for a panning effect while the characters walk on the spot, a cel, which remains static above the background, is essential.

FULL COLORED CUTOUTS
These have one immediately obvious advantage over drawn and cel animation. Since the character design does not have to be repeated many times by many hands, a more lavish use of texture, shading, and detail is possible. Cutout figures made of cottages of gorgeous patterned papers counterbalance the limitation of movement of which they are capable.

What your character is going to do is the consideration which guides what cutout pieces you will need. These are the basic necessities. Additional pieces you may need are gripping or gesturing hands, bent arms, and three-quarter-view heads. Heads with particular facial expressions may also be a requirement.

CONTROLLING MOVES
Judging the distance to move pieces is something that you must learn by experience. In order to control moves, however, it is sometimes useful to have a piece of paper calibrated with the distance, frame by frame, that you have calculated is the required move.

- A calibration is used to calculate the distance the slipping foot moves back for a walk on the spot. If there is a background, the calibration should be paralleled in the background move. The scale is laid in place for the move, but taken away for shooting.
- Similar calibrations can be used to guide the speed of other movements.

CUTOUT MOVEMENT STYLE
Even with a limited set of pieces, some lively poses can be obtained. Explosive changes from one pose to another are suggested rather than slow, smooth movement.

- Probably none of the poses will stand scrutiny for long pauses on the screen, unless you can achieve a really elegant assembly.
- Quick-fire slapstick is the natural mode

SAND AND GLASS

In both these techniques, images are made in a fluid substance on a backlit or bright surface. The marks made remain long enough to be filmed but can be changed for the next move.

Unlike the drawn lines of conventional **animation, the pictures are** created in areas of light and shade by scribing **or brushing into the** paint or sand. When paint is used, the images can be fully colored, but with sand it is usually monochrome.

The movement of the animation is created by gradually modifying the drawing, frame by frame. Sand retains its fluidity, of Course, but Paint must be kept moist. Oil paint, which is slow drying, is the best medium; the same scene can be worked for several days without the paint drying up, even on a lightbox, provided it is covered with a damp cloth when it is to be left for any time.

As with Cutouts, the work is done directly under the camera, so the techniques are well suited to the solo filmmaker. Because it is impromptu work, you need to be confident of your drawing skills, and of course you must have unlimited access to a rostrum camera, as the whole of the animation is created there.

Both techniques work best on glass, but a glass surface is not essential for sand. For the painted method, glass has to be used, as lit provides a nonabsorbent surface which can be wiped clean of paint as necessary. A light box beneath the glass makes the work much easier, buy not absolutely necessary. For either technique, one of the useful things about the glass is that pre-drawn key positions call be slipped under it as guides for the movement. When sand is animated over a light, it produces a highly contrasted light and dark image, which call be shot on black-and-white film. If the image is reversed - positive to negative - areas, which were black or dark become, light, and visa versa; white shapes on a dark ground become dark shapes on white.

ANIMATING WITH SAND

- **Animating with sand or paint on glass can be done freely without any predrawn guidance, but it is an advantage to have a method where preliminary layouts can be used.**
- Although placing a box on the rostrum table normally does this work, any horizontal surface with a downward-pointing camera will serve.
- Using the reference drawing, the first image is made in the sand using fingers and a brush to define the shapes and create textures in the sand.

- Once the frame is complete, the reference drawing is removed and the shot taken. The backlit effect is shown in the insets. (1)

· A general view of set-up. The specially designed glass tray is placed on the rostrum table over a backlight. (2)

· Besides your fingers, brushes and wooden skewers are useful tools for moving the sand. Stencils can serve to define shapes, particularly for background details. If the work is top-lit, pressing objects into the sand can create textures. A small strainer is a useful way of adding fine layer of sand to shade areas.

· The first in an action series. In-between positions have been omitted. (3)

· By shifting the sand around, a new pose has been achieved, step by step. (4)

· The hand has now been moved down, leaving the spoon. (5)

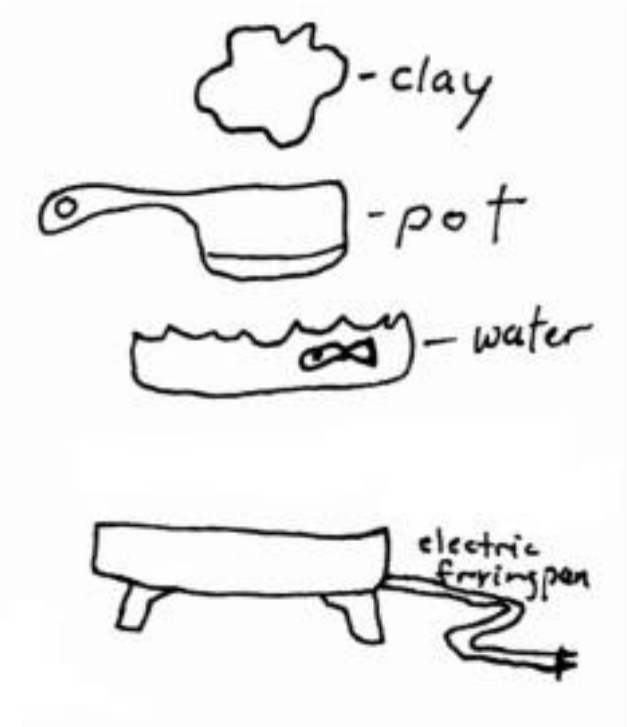
· A stage in the metamorphosis of the image, figure is shrinking as the spoon moves up. (6)

· … to take the principal role… (7)

· … and turn back to the original image. (8)

COLORING AND MELTING PLASTALINA (MODELING CLAY)

- Melt white or light colored Plastalina in a double boiler or crock-pot
- An electric frying pan filled with water and an old pot work best
- Bend a wire hanger, placing it in the frying pan to keep the pot from touching bottom
- Add paint or 1 inch by 1 inch cubes of colored clay
- Add small amounts of oil paint or tempura paint, at a time, but keep track of the amount
- Make sure to mix paint and clay well or pockets of unmixed paint will form inside the clay making a marble-effect when the clay is being shaped



REPAIR

- If a lot of paint is used the clay will become too soft
- Adding baby powder to the melted clay can stiffen the clay up

SPECIAL NOTE

- Be careful when lighting scenes with clay characters
- Heat from the lights can soften or melt the clay if too high of wattage is used