Chapter 6.

# MASKS

Masking in airbrush technique is as important as having the full number of strings on a violin; you cannot work without it. Whereas brushwork creates its own outlines, airbrush strokes are comparatively fuzzy; precise outlines can be made only with the help of additional devices: masks and shields.

By definition, anything solid interposed between a support and a spraying airbrush is a mask. A coin, a leaf, a shield, a paper clip, a template, a comb, a finger, a piece of gauze or wire (Figure 6-1)—these are only a few random examples of the endless possibilities of masks that already exist, awaiting the artist's inventiveness. The intricacy of design in most airbrush works, however, requires that the artist prepare special shapes for each work.

No matter how complicated it is, a mask is nothing more than curved and straight lines assembled in a particular pattern. Straight lines are easy; they can be drawn and cut either freehand or with a ruler. Curves require more analysis. There are two categories: geometric and geometrically nondefinable; the latter must be drawn freehand. The human profile would be an example of a geometrically nondefinable curve.

## Constructing Curves

To understand the nature of the curves you will use in airbrush work, it is necessary to take an excursion into the realm of geometry. This theoretical subject is difficult, but it is so often neglected—and such an integral part of airbrush technique—that it is worth the effort, so bear with the digression. What follows technically belongs in the chapter on masking technique, but because airbrush rendering demands a precise, accurate mask, the theoretical discussion of curves serves a better purpose here. The two qualities of curves that we shall attempt to explain are *continuity* and *flow*.

**Continuity** Examine the two curves in Figure 6-2. At first they look similar, and indeed to most people they may seem identical, but upon further scrutiny the artist can see that curve *b* is more pleasing than curve *a*. The geometer has no trouble explaining why this is so: curve *a* was obtained by inscribing arcs of four circles from centers *A*, *B*, *C*, and *D* with a compass (Figure 6-3*a*); curve *b* was obtained by attaching a continuous piece of string to two nails, *A* and *B* (Figure 6-3*b*), and drawing the curve with a pencil (*P*), guided by the taut (and not stretchable) string. The string has a constant length of $a + b + c$. The length of *c* is always the same; *a* and *b* can change, but their sum is constant. Thus the law determining the construction of this curve, which is an ellipse, is valid for every position of *P*. The curve is geometrically continuous.

In Figure 6-3*a*, on the other hand, arcs *mn* and *pq* were drawn with the compass opened to radius *R*, whereas arcs *mp* and *nq* have a radius *r*. The change of radius at points *m*, *n*, *p*, and *q* results in the discontinuity of the curve; arcs *mn* and *pq* are defined by the law of *R*, but *mp* and *nq* are defined by *r*.

Yet this curve is *optically* continuous because of another law that you should learn (refer to Figure 6-4): arcs of two circles of different radii that join at a point *J* are optically continuous when point *J* falls on the same straight line *AB* as the centers of the two circles. According to this statement, as long as points $C_1$, $C_2$, and *J* can be connected by the same line, *J* can be located outside the segment uniting centers $C_1$ and $C_2$, or, as in Figure 6-5, anywhere between them. In the second case the curve is shaped like an S; point *J* determines the reverse of the curvature. In geometry this point is called a point of inflection.

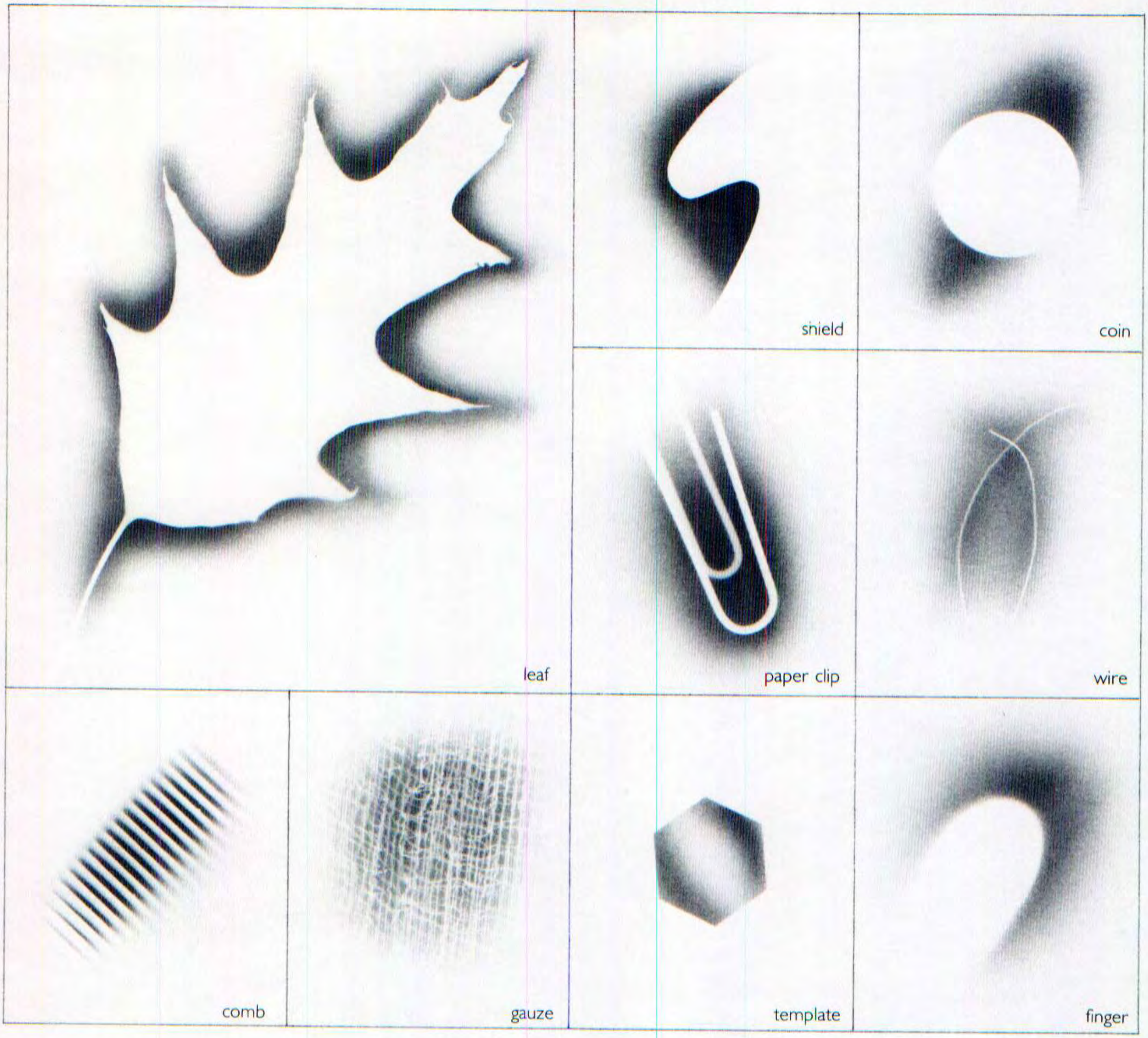



Figure 61-. Any solid material can be a mask.

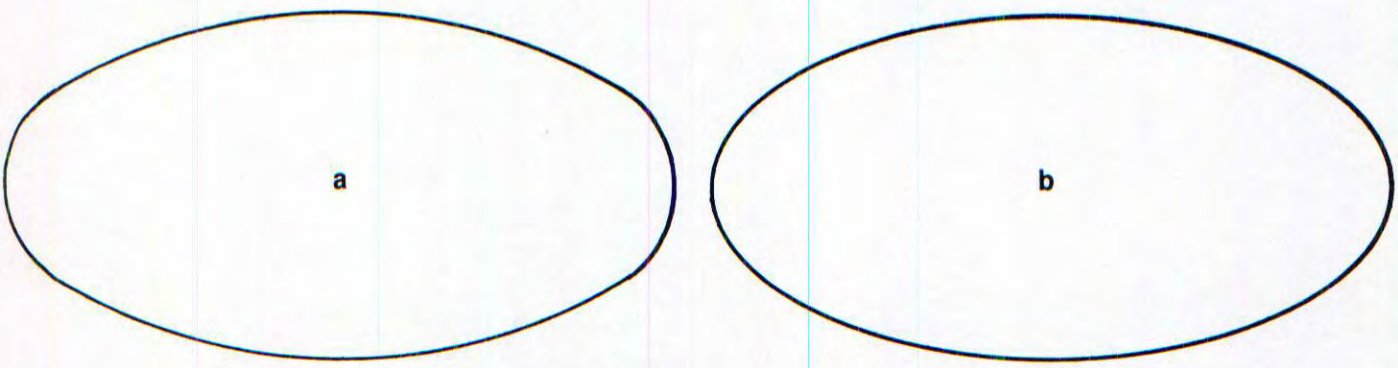
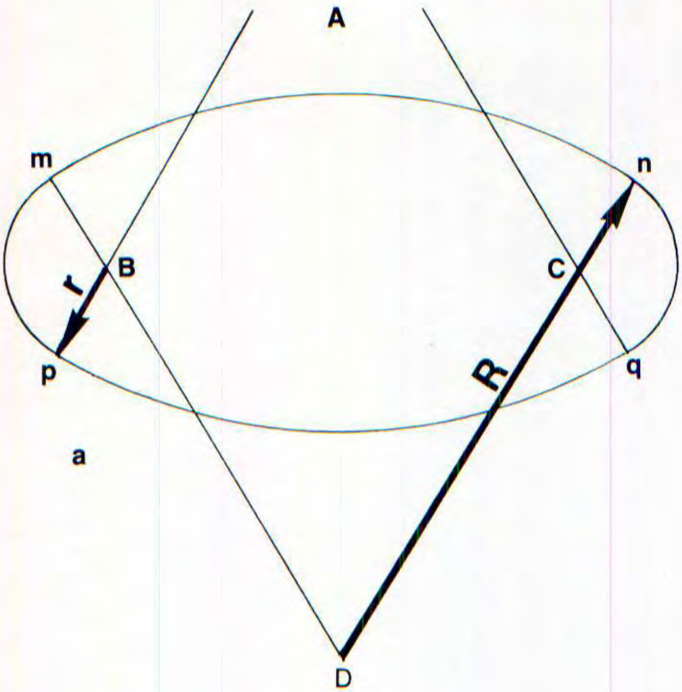



Figure 6-2. These two ovals look almost identical, but they are geometrically different.



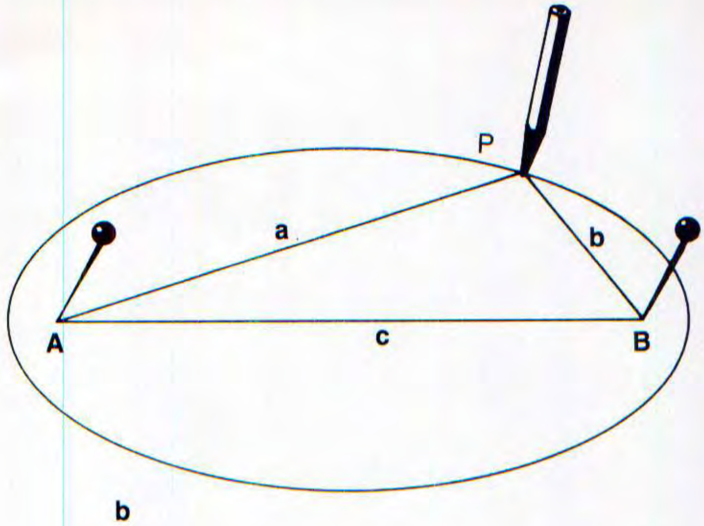




Figure 6-3. *(a)* An oval constructed with four centers and four arcs. *(b)* An ellipse constructed with two centers, taut string, and continuous pencil movement.

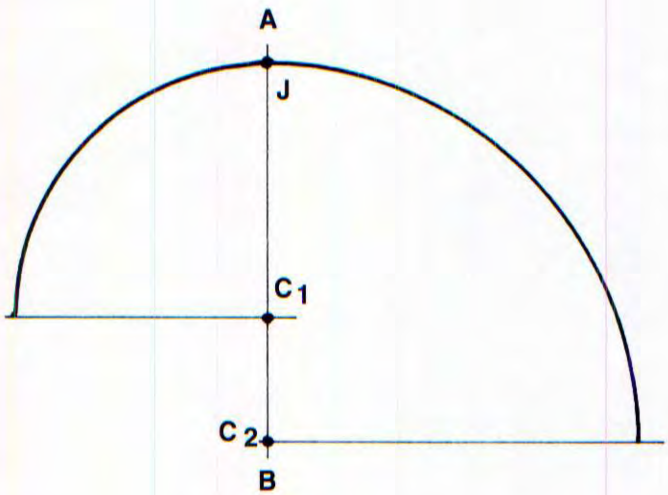



Figure 6-4. A continuous curve constructed from two circles, $C_1$ and $C_2$, that have different radii. Junction point *J* is located on the same straight segment *AB* as the centers of the two circles.

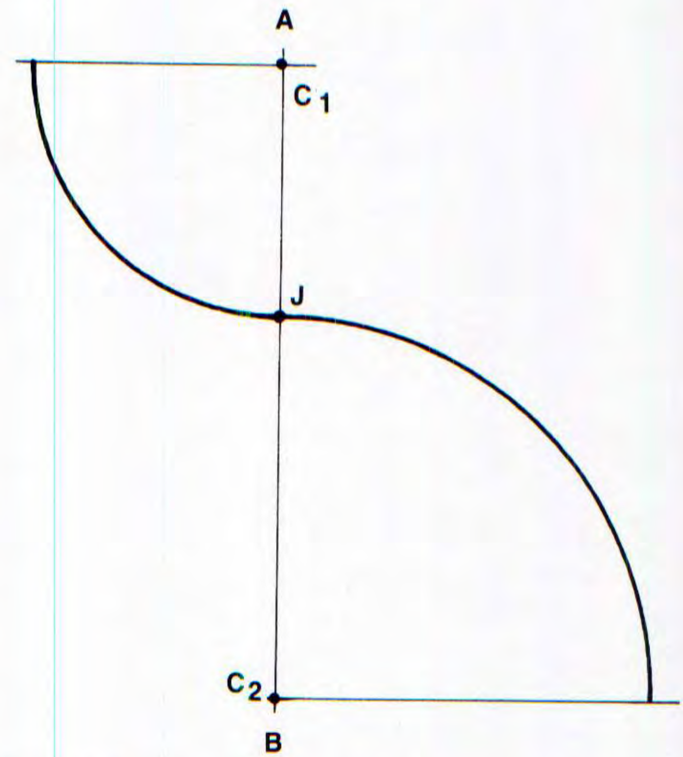
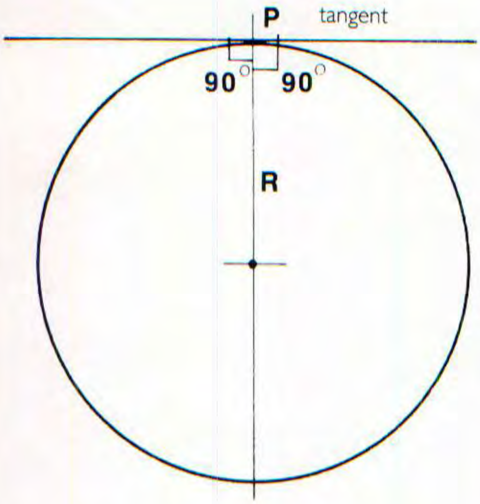



Figure 6-5. Two circles with different radii can also have point *J* situated between their centers; this is an inflection curve.

The rules learned so far are helpful for constructing curves composed of continuous arcs of circles. In masking and freehand drawing, however, most composed curves are not circle-based and the problem of centers is practically unsolvable. Therefore, we must use another geometrical property. As shown in Figure 6-6, a line drawn at point *P* on a circle, perpendicular to the radius *R* and not sectioning the circle but touching it at a single point, is called a tangent. In Figure 6-7, two circles that intersect at point *A* can have tangents $T_1$ for circle $C_1$ and $T_2$ for circle $C_2$. The tangents intersect at point *A* to form a certain variable angle $\alpha$.



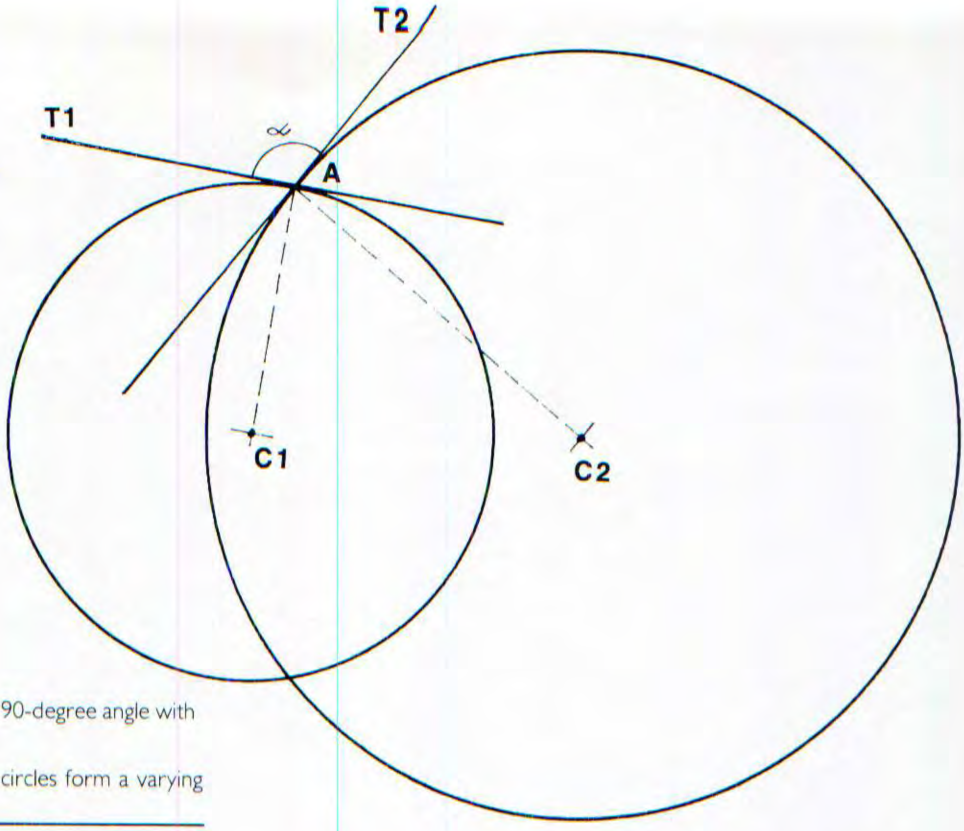




Figure 6-6. (Above) A tangent to a circle forms a 90-degree angle with the radius it touches.

Figure 6-7. (Right) Tangents of two intersecting circles form a varying angle $\alpha$.

Now refer back to Figures 6-4 and 6-5. According to previous statements, tangents drawn through *J* for circles $C_1$ and $C_2$ would form a 90-degree angle with the common line through the centers *AB*. The two tangents are therefore identical (sketch them in to prove this). We can therefore conclude that two circles—and by generalization two curves—are continuous if they have a unique tangent at their points of intersection.

The best way to draw a continuous curve made up of arcs of circles is to apply the first rule: having their point of intersection fall on a line drawn through the centers of the two circles (Figure 6-8). If the segments of the curve are not arcs of circles, however, a french curve rather than a compass must be used to construct them. In this case the tangent rule is the one to follow. You would proceed as follows (Figure 6-9):

1. Sketch curve *ABCDE* freehand.
2. Based on your familiarity with french curves, establish practically traceable segments of the curve with end points *A*, *B*, *C*, *D*, and *E*.
3. Draw straight lines $T_1$, $T_2$, $T_3$, $T_4$, and $T_5$ through points *A*, *B*, *C*, *D*, and *E*; these are tangents to the curves.
4. Apply the appropriate french curve to segment *AB* and adjust it so that it becomes tangent to $T_1$ and $T_2$ at *A* and *B* respectively. Draw the segment.
5. Apply the appropriate french curve to segment *BC*. Adjust as in step 4.
6. Draw the segment, paying particular attention to the continuity between segments *AB* and *BC* at point *B*.
7. Continue with the same procedure to complete the curve. Note that point C is an inflection point, so the next segment, *CD*, must be drawn from the other side of $T_3$.

**Flow** Suppose you were to succeed in composing a curve whose continuity is so good that no one could say where the *J* points are, but you are still not satisfied with it. Even though technically beyond reproach, it lacks an aesthetic quality—it has no motion, no life. Figure 6-10 shows such a curve; it is flawlessly continuous, yet it seems clumsy, especially at *A* and *B*. Of course, you may need exactly this shape for a particular piece of art; but for most applications the connection at *A* is too sharp, the two sides of *B* are too straight, and the segment at *B* which unites the two sides is too small. Geometric logic has nothing further to do with the problem; artistic considerations take over.

With a tissue begin to correct the curve in pencil as shown in Figure 6-11, according to the preceding criticisms. When you have achieved the look you seek—when the curve has *flow*—translate the new shape into a precise line as before with french curves (Figure 6-12).

This is a common example of the difference between a precisely constructed curve and one that flows. A sensitive artist can detect even a hair-thin difference in expressiveness between curves. In

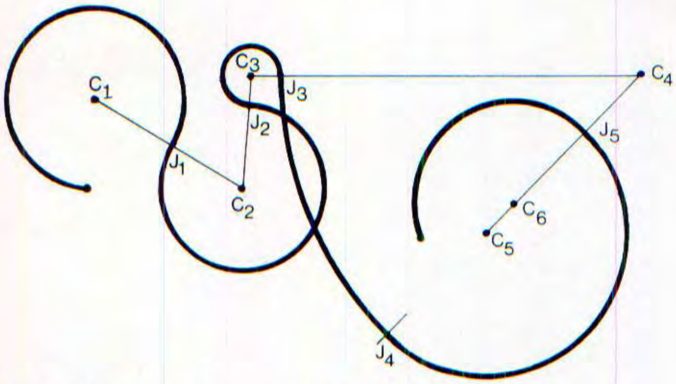



Figure 6-8. A continuous curve composed of arcs of circles is best constructed with straight segments drawn between centers to determine the junction points.

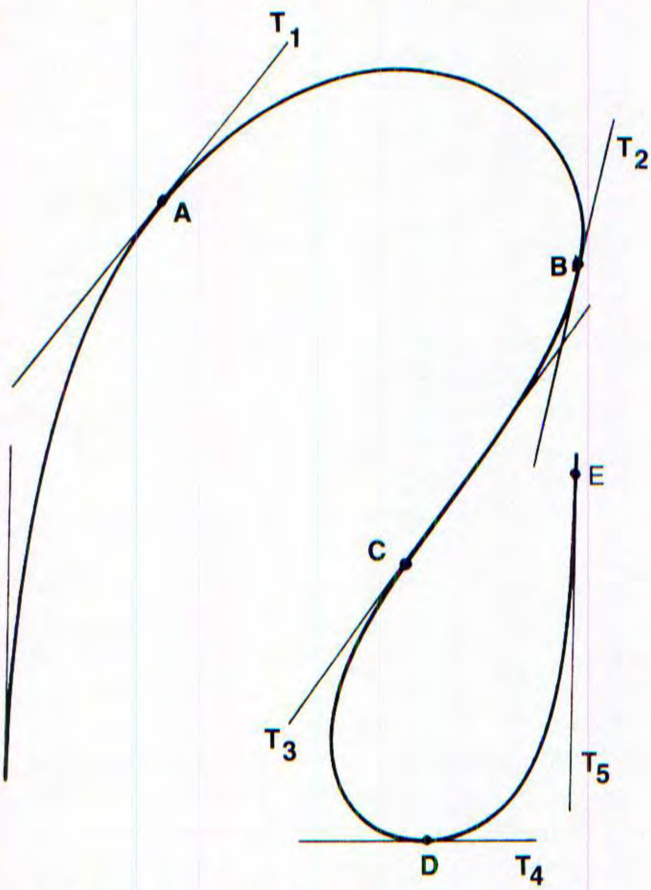



Figure 6-9. A continuous curve of noncircular segments is better constructed with tangents.

Figure 6-13, for example, the continuity at points *A* and *B* must remain the same, but curve 1 and curve 2 are alternate connecting segments. The artist must choose the one that better expresses the purpose of the artwork. The ability to perceive and use such subtleties distinguishes the high-quality commercial or fine artist from the ordinary artist. The former strives to express a precise feeling and a precise message through a precise image. When you understand this, you will forgive the length of the preceding theoretical discussion. We can now turn

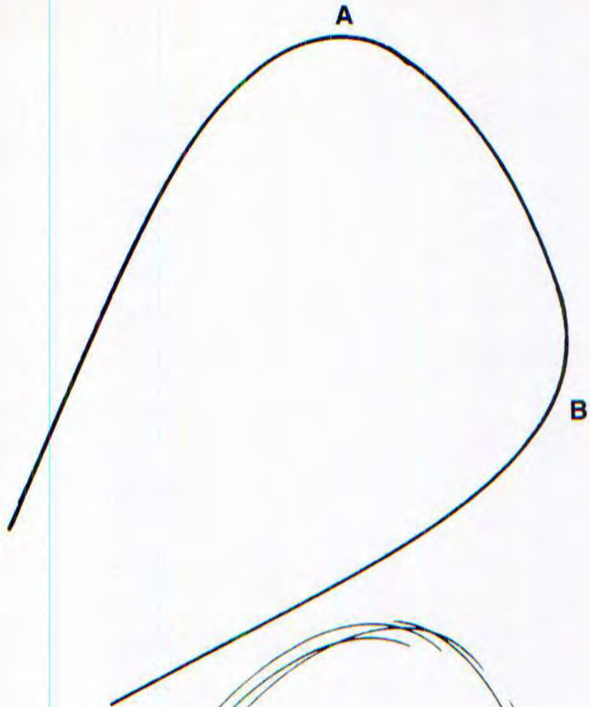



Figure 6-10. (Top) A technically continuous but lifeless curve.

Figure 6-11. (Middle) Sketched attempts to correct the curve.

Figure 6-12. (Bottom) Corrected flowing curve.

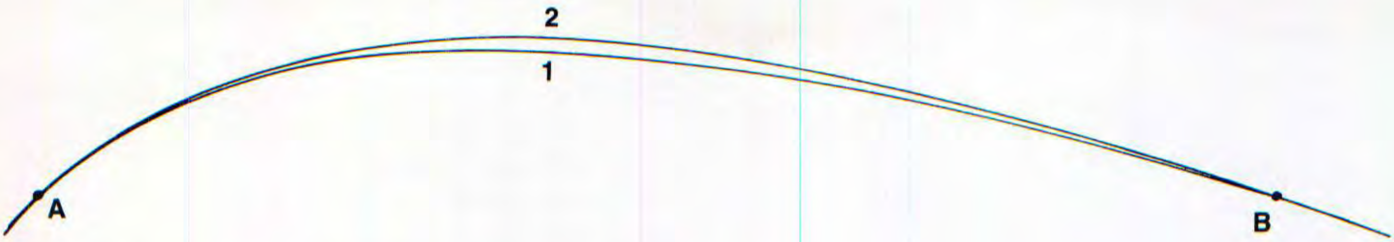



Figure 6-13. The artist decides whether curve 1 or curve 2 is more expressive for his or her purpose.

to the more practical aspects of masking.

## Mask Materials

Masks can be made of paper, vellum, frisket, acetate, or plastic vellum (denril). As we explained in Chapter 5, transfer the lines of reference to the airbrush support first; then transfer the drawing to the mask. The reasons for this sequence will become apparent as you study masks.

**Paper** For rough drawings where precision is secondary to some other purpose, paper is adequate. If it is fairly thick and rigid, it can be used repeatedly for light sprays that do not dampen the paper much. Paper is generally cut freehand with a knife or scissors. It is not, however, the best masking material.

**Vellum** When multiple sprays must be performed, vellum is sometimes used because of its translucence. Glue two sheets together with rubber cement for reinforcement before you transfer the drawing. It is advisable also to spread rubber cement on the surface of the mask so that multiple sprays will not damage it.

**Frisket** This is a ready-made masking material made of paper or plastic coated with a very thin layer of rubber cement or a similar adhesive. Transparent and translucent frisket is available in rolls or sheets, protected by a removable lining. To use frisket, transfer the drawing, cut the frisket *roughly* to the shape of the surface to be sprayed, and apply it to the surface, adhesive side down; only *then* do you cut the mask precisely. You must use a very sharp knife and light pressure so that you will not damage the support. Peel off the frisket that covers the areas to be sprayed.

Friskets are recommended primarily for use on unworked surfaces or areas painted with stable inks, dyes, oils, alkyds, and acrylics. The adhesive can damage surfaces sprayed with gouache or some pigment watercolors. A good frisket is excellent for producing clean, sharp edges, but it can be used only once.

Liquid frisket, which in most cases is a messy bother, is not recommended.

**Acetate** On surfaces painted with gouache, on glue-sensitive supports, and for repetitive masking, the ideal mask material is clear acetate. It will provide accurate cuts and good durability no matter how often it is used. Use acetate from clean, unwrinkled sheets (do not use rolls; they never uncurl completely, so they are more difficult to cut and lay flat). Drawings cannot be transferred to acetate, so you must cut the mask with the drawing positioned underneath. During this operation the drawing must not move; a better method of securing it than the classic one of taping with masking tape at four corners is to completely glue the acetate to the drawing with rubber cement. This leaves both hands free to hold cutting tool and guide (Figure 6-14), and there is no possibility of drawing distortion due to slight shifting of the acetate or drawing. Another advantage of gluing is that if the mask contains cutouts within the larger cut area, the smaller pieces will remain stuck to the drawing until you need them instead of getting lost. The drawing will probably be ruined by the gluing and cutting, but that is why we have recommended transferring lines of reference to the support before making masks. When multiple cuttings are required, it might be necessary in rare instances to make copies of the drawing for as many acetate sheets as you will need to cut. These copies must be made by blueprint; photocopiers tend to distort.

In cases where the support has already been sprayed and you need a precise outline for your next spray, an excellent compromise between frisket and acetate is plastic vellum. This is a very thin, opalescent material, completely resistant to water, like acetate, but offering a matte surface. The drawing can be transferred onto the vellum and the mask cut prior to pasting. Apply a *thin* coat of spray adhesive (like Grumbacher's brand, *not* rubber cement) on its back, wait some 5 minutes for it to dry, and gently apply the mask to the support. It will lie flat and rigid while you spray and will peel off without damaging the surface or leaving a trace. The only drawback to this type of mask is that such plastic vellum is rather expensive.