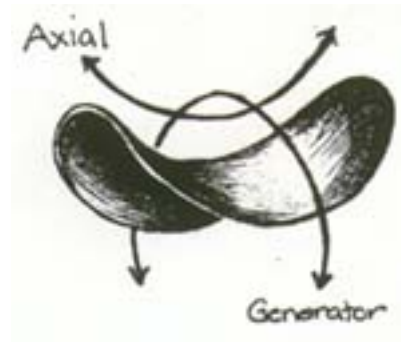


# Anticlastic Raising

*Anticlastic Raising* is a technique of metal forming whereby sheet metal is formed directly with a hammer on a sinusoidal (snake-like) stake. A flat sheet of metal is shaped by compressing its edges and stretching the center so that the surface develops two curves at right angles to each other (fig. A). The pattern of the sheet plays a major role in the form that will be achieved, however, many different forms can often be made from the same pattern.



**The process of anticlastic raising is done using primarily the following tools:**

1) A Sinusoidal Stake - generally made of steel, wood, or plastic, it is used to support the metal throughout the forming stages.



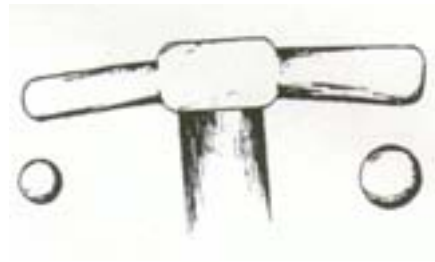
2) Straight Mandrel - steel straight stake used in closing stage.



3) Cross Peen Hammer - if a steel stake is used, then this hammer should be made of plastic, if a plastic stake is used, a metal hammer is needed : it is used for the forming stage.

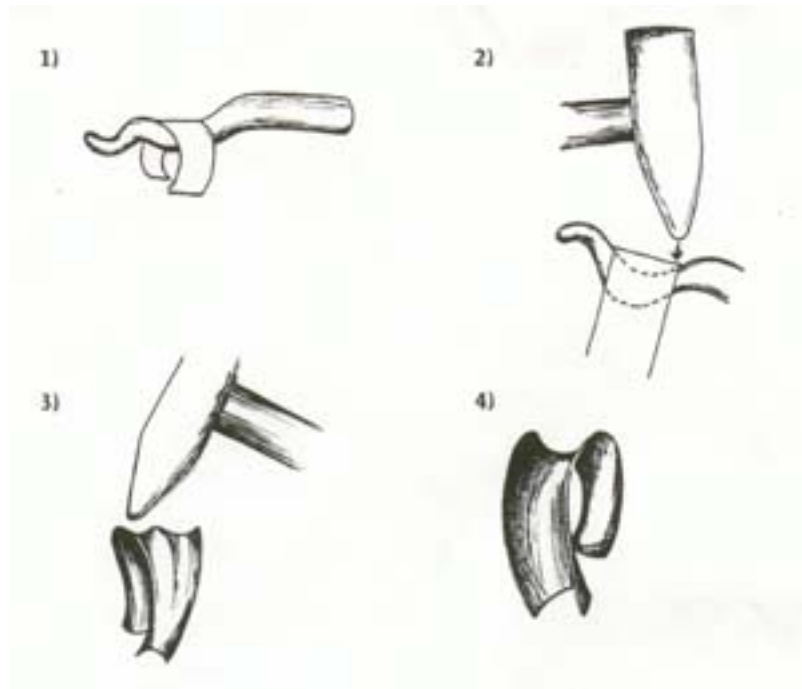


4) Planishing Hammer - this is a metal hammer used for the closing and finishing stages of the process

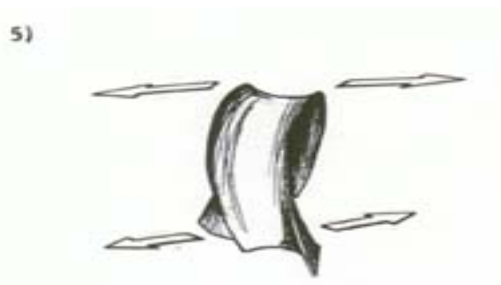


**The following description gives only a very basic explanation of the technique. Years of practice may be needed to perfect the skill and to gain consistency.**

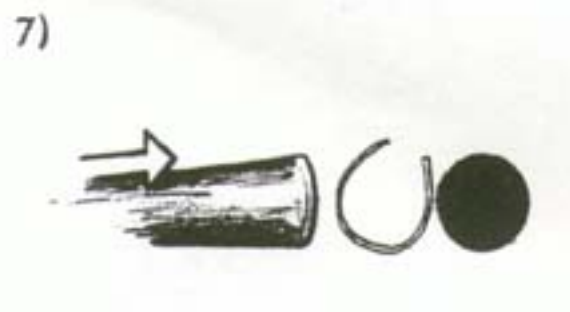
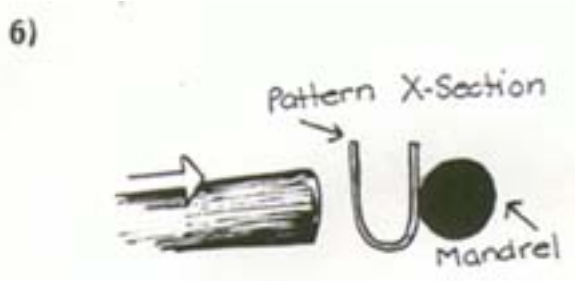
**Stage 1 Forming** - To begin, the pattern is bent around the curve of the sinusoidal stake (fig. 1). Using the cross-peen hammer the metal is hit just at the point below where the metal is supported by the stake (fig. 2). This is repeated along the edge of the pattern so that each blow slightly overlaps the previous one. The pattern is then turned around and the same raising process is done on the other edge (fig. 3). This is continued with each pass moving slightly toward the center until the piece is smooth (fig. 4).



**Stage 2 Forming** - The pattern is then bent around the stake again. As the generator curve of the piece is pinched closed, the axial curve will open up (fig. 5). The piece is then raised again as in Stage 1. When the limits of the curve are reached, it may be necessary to move to a tighter curve on the stake. This part of the forming process is continued until the desired axial and generator curves are reached.



**Stage 3 Closing** - For the closing stage, a straight mandrel and planishing hammer are used. To begin closing, the piece is rested against the mandrel and then hit on the opposite side of the form (fig. 6). This will bring the two sides together. When the cross section of the form reaches a "U" shape, the form is hit more toward the top in order to close the tube (fig. 7).



"Using primarily the anticlastic principle I try to investigate the most direct and economical forms a plane will assume when it's edges are stretched and it's center compressed. Depending on the initial shape of the plane, and the degree of expansion and compression imposed upon it, there appears to be a natural sequential development of form that finds a certain parallel in nature, and serves as a metaphor for movement on all levels both the physical and psychological."  
Michael Good



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