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## A simple design for an impossible triangle

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The impossible triangle, or tribar, was introduced to psychology by Penrose and Penrose (1958). It has been used by Gregory (1968, 1970) as a vivid demonstration "that perception is a matter of selecting appropriate hypotheses of external objects" (Gregory 1970, p 56), by Hochberg (1968) as evidence for local depth cues and schematic maps, and by Escher as a source of inspiration (Ernst 1976; Teuber 1974).

While the impossible triangle can be built, it has received little experimental study. One reason for this neglect may be difficulty in constructing the triangle. Gregory (1968, 1970) has provided enough views of his triangle to allow others to copy it, however, his design is fairly complex. A simpler alternative is therefore offered.

Figure 1 contains plans for the construction of the triangle. The exact dimensions are not important, as long as the three sides are of equal length. Figure 2a is an example of three such triangles viewed from 7.75 m. Figure 2b was photographed from a point 1 m to the right of the point from which figure 2a was photographed. The left two triangles of figures 2a and 2b can be built according to the plans of figure 1 by obtaining three equal lengths of stock with a square cross section. One of these pieces then has one end cut off at a 45° angle. The cut in the top elbow of the pipe triangle was adjusted by sight rather than being constructed from plans.

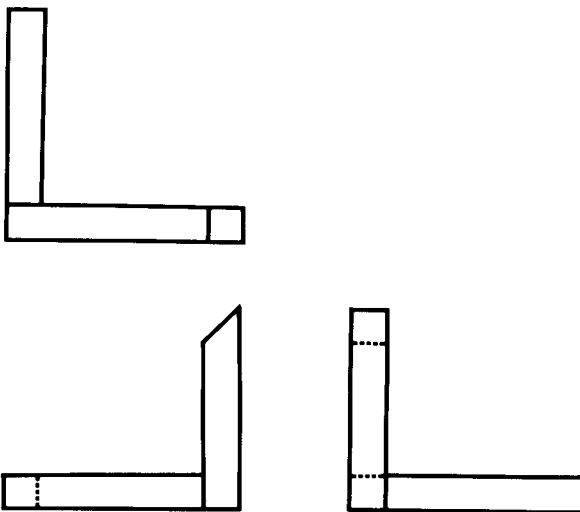
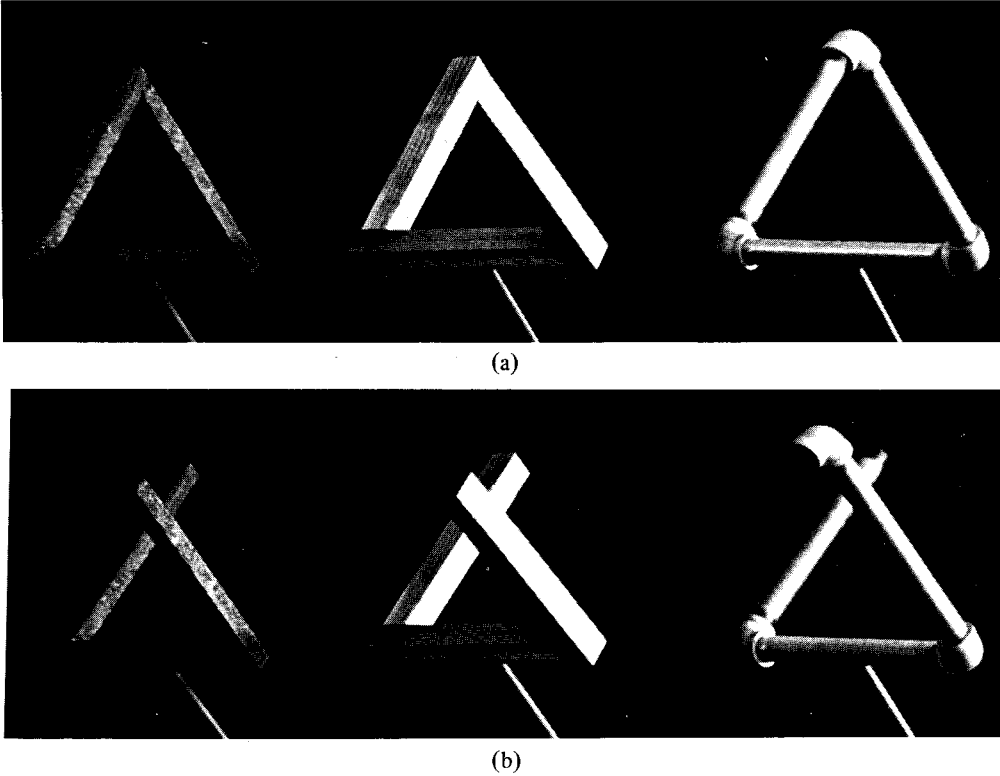


Figure 1. Plans for building the impossible triangle.

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The simplicity of the design allows the triangle to be built with minimal difficulty. For example, the center, wood triangle in figures 2a and 2b was built using only a handsaw and glue. With some skill the material can be varied and the complexity of the design increased.



**Figure 2.** (a) Three triangles seen from 7.75 m; (b) the same three triangles viewed from a point 1 m to the right.

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