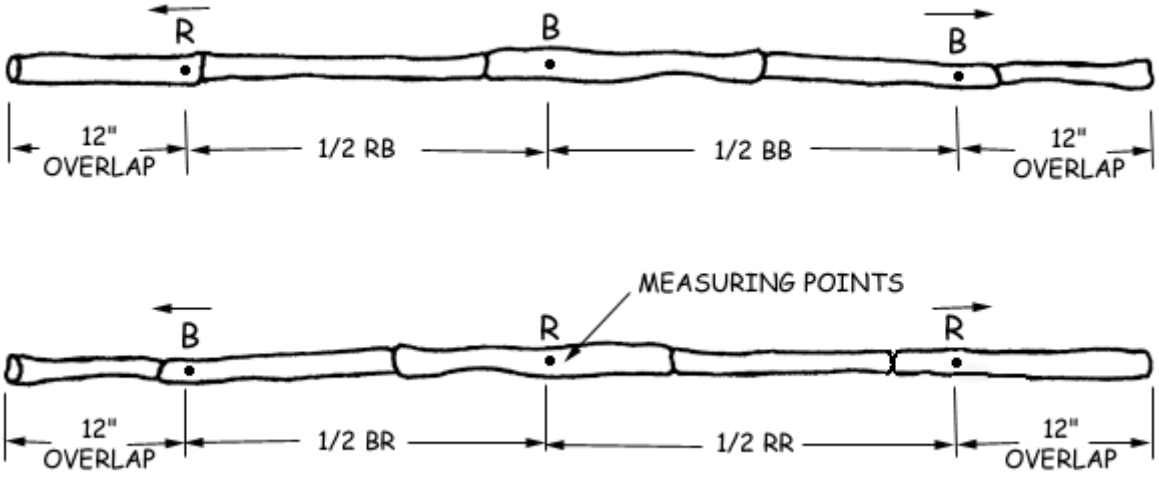
Dome Assembly

The geodesic dome, as shown in the assembly diagrams, contains two different joints: a B joint which occurs at the vertices of all pentagons formed, and an R joint which occurs at all other points.

The spans from joint to joint are BB, BR, or RR. The arc factors of these lengths are:
BB=.26030616, BR=.31030984, RR=.32636688.
For these factors, the radius of the dome is 1.00. To construct a 22' dome (11' radius) the lengths of the arcs would be as follows: BB=2.86', BR=3.41', RR=3.59'.

Cutting and Measuring the Members

There are only two different lengths of members used in the erection.

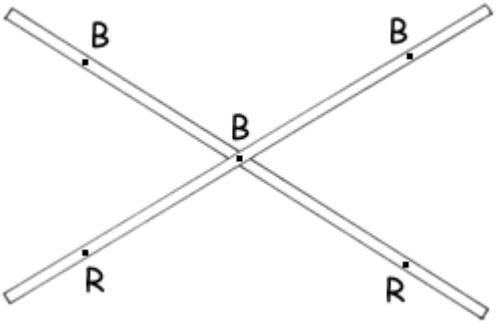


For a 5/8 dome, the cuts (sticks) required are:
70xRBB+70xRRB (70)
10xRRB+10xRR (10)
10xRB (3)

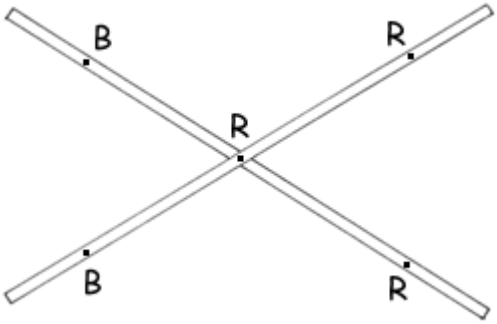
83 sticks and 280 ties altogether.

A line of color can be drawn around the bamboo members at each measuring point. Use blue for the B points and use red for the R points.

Cross Assembly



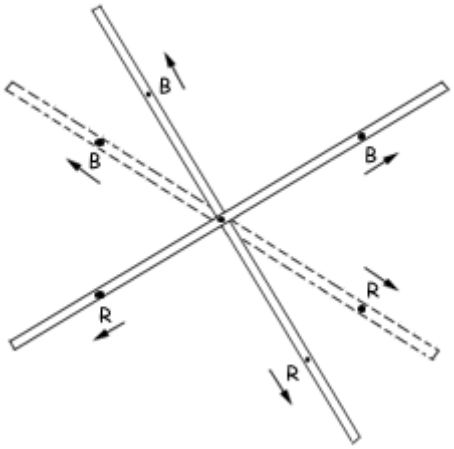
The B cross consists of two B members whose lengths are: 1/2 BB plus 1/2 BR plus 12" extra at each end.

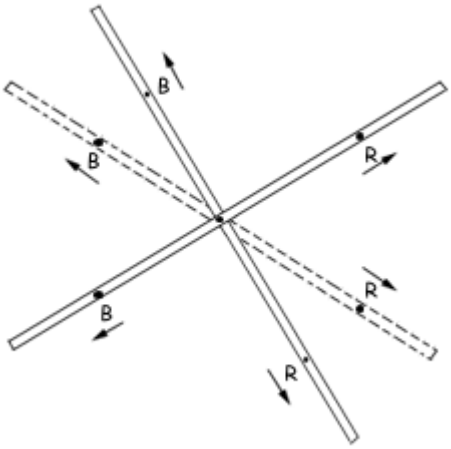


The R cross consists of two R members whose lengths are: 1/2 BR plus 1/2 RR plus 12" extra at each end.

With 12" extra on the end of each stick, there'll be a 24" overlap when the crosses are assembled.

Cross Tying





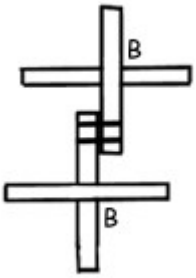
Place members at right angles to each other and tie firmly, but not too tight. During assembly of the dome, the crosses will twist into proper position as shown.

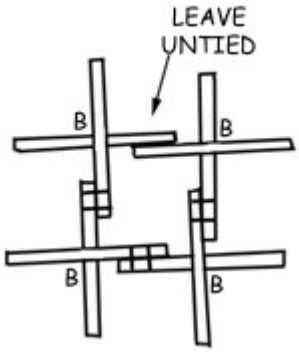
In all cases, when looking at a cross with the acute angles at the sides and the obtuse angles at the top and bottom, the member going from the upper right hand corner to the lower left hand corner always passes over the other member.

Stage 1 Assembly

The first stage in the assembly of the dome is the construction of the pentagons at the top of the dome. This process employs **5 B crosses.**

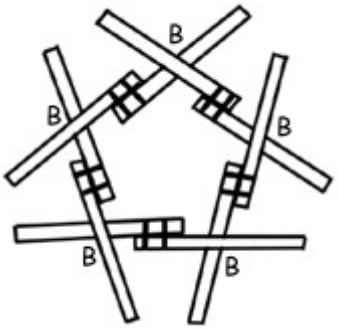
Step A: Tie together two B crosses as shown in in the diagram. Note that the end measuring points have the same designation as the cross to which they are connected.





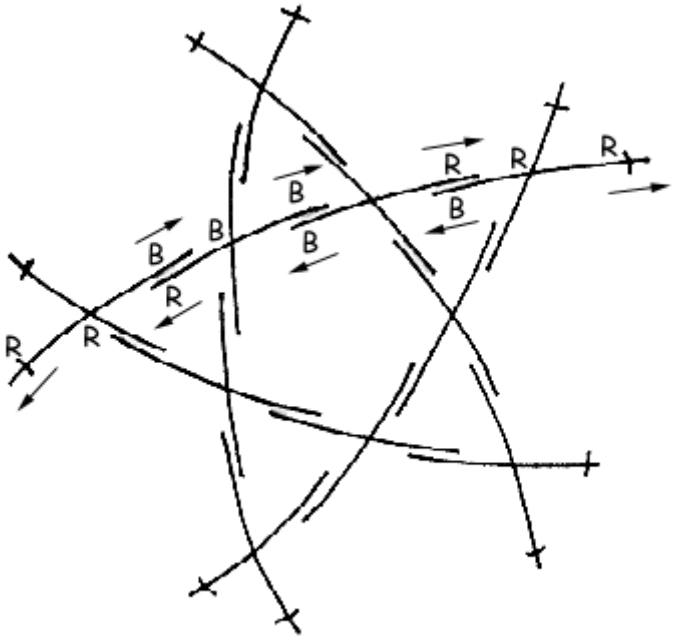
Step B: Add two more B crosses in the same manner as shown in step A.

Step C: Add fifth B cross between the untied legs. In order to insert this cross, all crosses will be twisted so that a regular pentagon is formed.



Stage 2 Assembly

The second stage consists of closing the five triangles around the pentagon. Use **5 R crosses.**



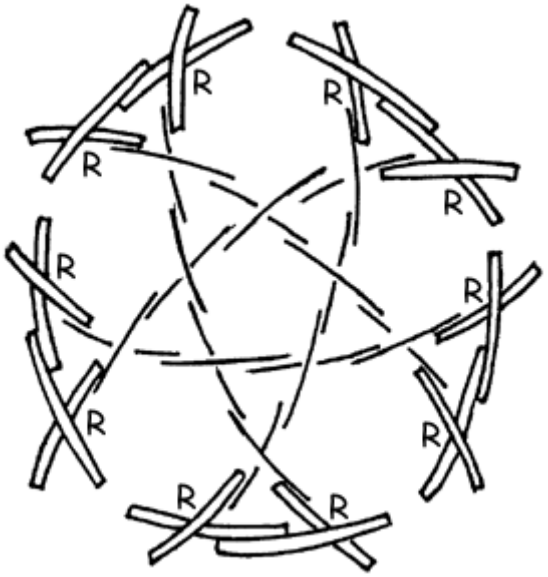
Again, the end measuring points always have the same designation as the cross to which they are connected.

At this point, the structure will tend to bow. Turn the figure so that it is concave downward.

Prop It

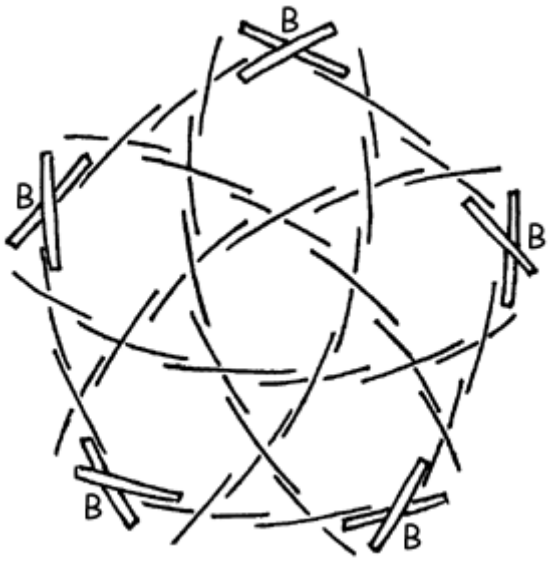
Lift the assembled figure off the ground to facilitate the addition of new crosses. Use five bi-ped props. Each prop consists of two bamboo sticks about 7 feet long, tied together near the top with a cord about a foot long. These props will then support the dome at equidistant points from it's apex; first at the five vertices at the top of the pentagon, later at five corresponding points on the top five hexagons.

Stage 3



For the third stage, use **10 R crosses** as shown.

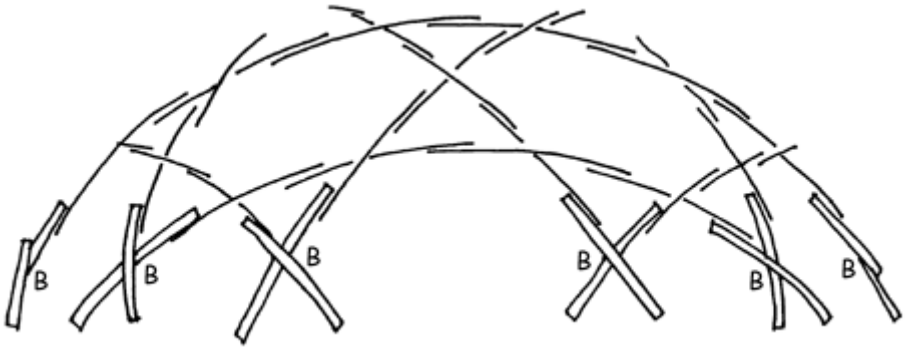
Stage 4



The fourth stage uses **5 B crosses** which close the five hexagons.

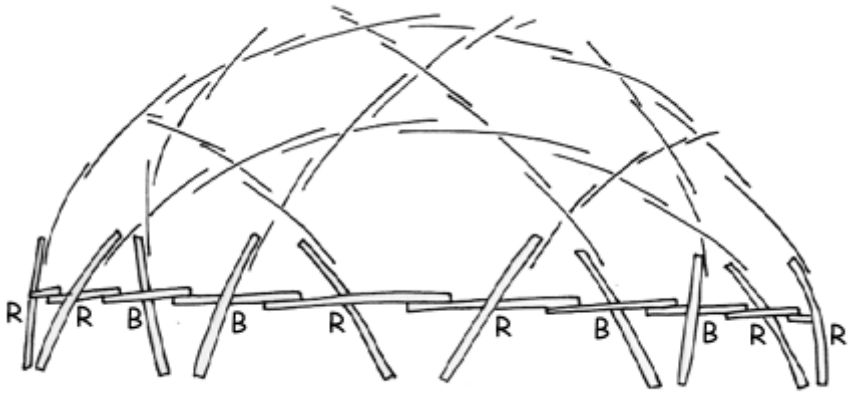
You should spread the **canopy** over it at this point.

Stage 5



The fifth stage uses **10 B crosses** to close ten triangles. Six of the crosses can be seen in the diagram above.

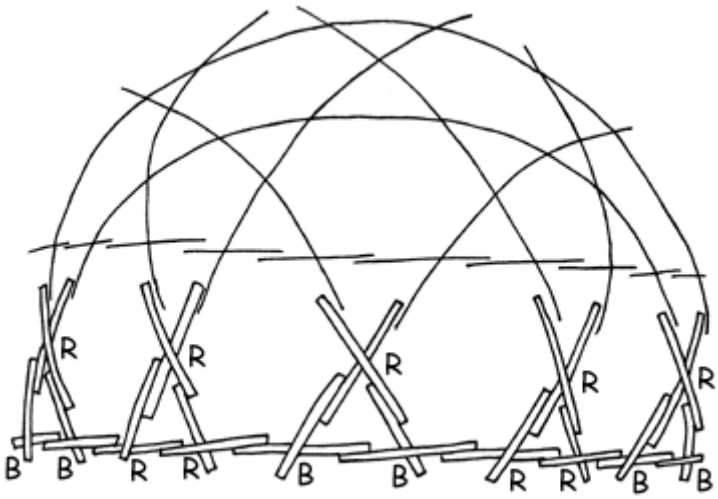
Stage 6



The sixth stage uses **10 B crosses and 10 R crosses** to complete the first horizontal band. We now have a 3/8 dome.

Thread and tighten a long loop of rope through/around the horizontal ring

Stage 7,8



To complete the 5/8 dome requires two stages. The seventh stage uses **10 R crosses** and the eighth stage uses **10 R crosses and 10 B crosses**. On the last twenty crosses, all members pointing towards the ground should be cut off 12" from the cross' central point.

Thread and tighten a long loop of rope through/around the bottom horizontal ring.
Anchor the bottom ring to the ground.