Bamboo Dome Field Guide

Materials (the bamboo struts are referred to by the color of the wider marking in the middle/crossing point):

- 70 Blue struts (marked -r---B---b-), 80 Red struts (marked -r---R---b-), 10 each B/2 (marked -B---r-) and R/2 (marked -r---R-) half (short) struts
- 100 zipties, double-looped
- 15m rope x2
- 10 Tent pegs

Cross Assembly




Connect pairs of struts of the same color at the crossing point, starting with the (short + long) pairs of the bottom ring (the crosses that will be the base of the wall).

1. Lay a long strut over your knees, so that **the end of the same color as the crossing (middle) is pointing right**
2. Hang a ziptie over the crossing (middle) marking so the two loops hang down on opposite sides of the strut
3. Push a strut of the same color through the two hanging loops (crossing under the strut in your lap) with **the Blue end pointing forward and the Red behind you** until the crossing points are aligned
4. Pull the tie closed tight enough that the struts can't slide freely
5. *If you first make a cross each of R+R/2, B+B/2 (the two kinds of half-crosses you'll need for the bottom ring resting on the ground), R+R, and B+B you can have your helpers just copy them **exactly** until you run out of struts :)*
6. Pile up the crosses like with like

Preparation

*Make sure everyone is clear on how **overlaps** are connected. 5 minutes of practice can save you hours of work later!*

An overlap is the 20cm portion where the ends of two struts are aligned and connected to each other. At each end of the overlap unwrap enough of the long (tip) velcro strip from each of the two struts to wrap **tightly** around both struts - the connectors allow for a little movement (the struts form a 9° angle at overlaps)

1. overlap markings should be the color of the crossing they are to be attached to: **-r----R----b-** overlaps **-r----B----b-** so the **r** and **b** markings match up
2. struts are tied together with two connectors just short of the end: **-r----R---|=r/b=|---B----b-**
3. the struts should always alternate sides at every overlap (the diagrams show this, but it's worth pointing out :)

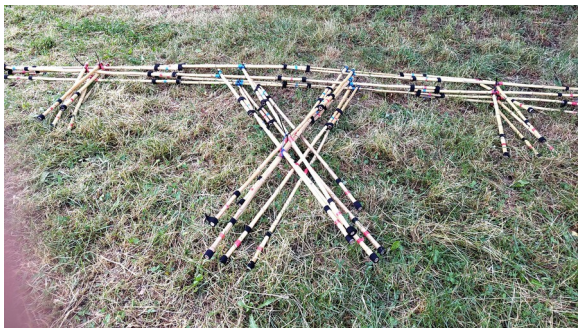
Polygons assembly

Pantagrams: The first stage in the assembly of the dome is the construction of the **6 pentagrams**. This process employs **5 B and 5 R crosses per pentagram.**

1. Connect five B crosses as shown in the first picture. When adding the fifth B cross between the untied ends, all crosses will be twisted so that a regular pentagon is formed.
2. Repeat until you have six pentagons
3. Attach R crosses to close the triangles at their tip

Bottom Ring: from the half-crosses and 5 R crosses, make 5 segments for the bottom ring

1. Attach 4 half-crosses (2x *R+R/2, 2x B+B/2)* in a row of RBBR with the short struts all pointing away from the long segment
2. Attach a Red cross in the middle between the free ends of the B crosses

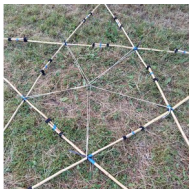


Dome raising

*It's easiest to do this as a **team of 7**, in the optimal case it can be done in an hour.*

Only one person needs to understand the whole process.

1. Start with a complete **Pentagram**.
2. Make an **anchor point** in the middle if you plan to hang anything in the center.



3. You should start spreading the **canopy** over it at this point. Start from the center and drape the edge as you go, avoiding any snags.
4. Attach the other **5 Pantagrams** around the central pentagram. At this point, the structure will tend to bow. Turn the figure so that it is concave downward.
   Walking around the structure laying out the elements for your helpers to attach can make this go really fast.
5. Lift the assembled figure off the ground. Use **five bi-ped props**. These props will then support the dome at equidistant points from it's apex; first at the five vertices of the top pentagon, later at five corresponding points on the top five hexagons.
6. Connect **overlaps** as they come together, make sure they are secure – you'll have tension on these and they'll be out of reach later.
7. **Girdle**: Thread and tighten a long loop of rope around the upper horizontal ring
8. **Bottom ring:** assemble the 5 RBBR segments into a ring. Check placement, then attach the bottom ring to the rest of the dome.
9. Thread and tighten a long loop of rope around the bottom ring
10. Anchor the bottom ring to the ground.