Bowles Array classic

We built a replica of the "Bowles Array" using off-the-shelf components. Since there is also an "Enhanced Bowles Array," we refer to this one as the "Classic Bowles Array." This is just to distinguish between the two — there is no difference in quality.



This time, we will start with a different setup because there is a lot to explain that will affect your setup later on.

The size of this array is **just** for demonstration purposes!

In reality, the size of the array depends on the size of the sound source. This array would work well for a small choir.

The three rods are 96 cm long. (~38").
If you are sure that you won't exceed this size, you should add three rapid adapters to the front rod before screwing in the cubes. If you are unsure and want to have the option, you should also do this. If you don't need them, it's no problem. Just fasten them, and you're good to go.

We added a microphone clamp in the middle to make it easier to distinguish it from the other rapdid adapters.

Things will be easier if you pay attention to the heights in this phase of the setup. Things may not look equally distant here, but that is due to optical distortion. So, your tape measure will be your best assistant.

Some remarks:

David Bowles recommended some general guidelines about the height of the button square (that's what you see on the picture) above the ground.
- For a string quartet, a good starting point is 2 m (~6.5 ft).
- For instruments and piano, start at 2.5 m (~8.2 ft).
- For orchestras and/or choirs, consider 3 m.

These numbers may not represent the optimal distances for your current recordings. They are just a rule of thumb. Nothing less, nothing more. Always let your ears be the judge!

If the musicians are on a stage, use the stage level as your starting point. Add the height of the stage to the height of your array setup, when you have to build it in the room of the audience.

Feel encouraged to experiment! Sometimes, you'll find the „sweet spot“ where you least expect it!



We added some small rods here to show how to expand the array slightly to both sides if needed.
If you need more width, you also have to consider the positions of the height microphones, which must be in the same vertical line as the omnis on the button square.

As this may require more rods for the height microphones, you should always be aware of the lever of the rods for the height microphones. Sometimes it is easier to unscrew the array and add more rods to increase the size.

That is the "price" one has to pay for the great flexibility of this array. We call it a fair price.

Now we added some things to the array.

We added the microphone clamps on rapid adapters on the button square, added four 50 cm (~ 19,7“) long rods for the height microphones. Also we screwed in a male/ male 3/8“ adapter and a microphone clamp on top.
One may argue, that this is not „d/2“, but … wait a minute. We „fix“ this with the microphones. More on this in just a minute.





When screwing in the microphone clamps, ensure that the longer end always points toward the inside. We need space to put the microphones in the best position, and the clamp may get in the way.

Just to avoid double work.



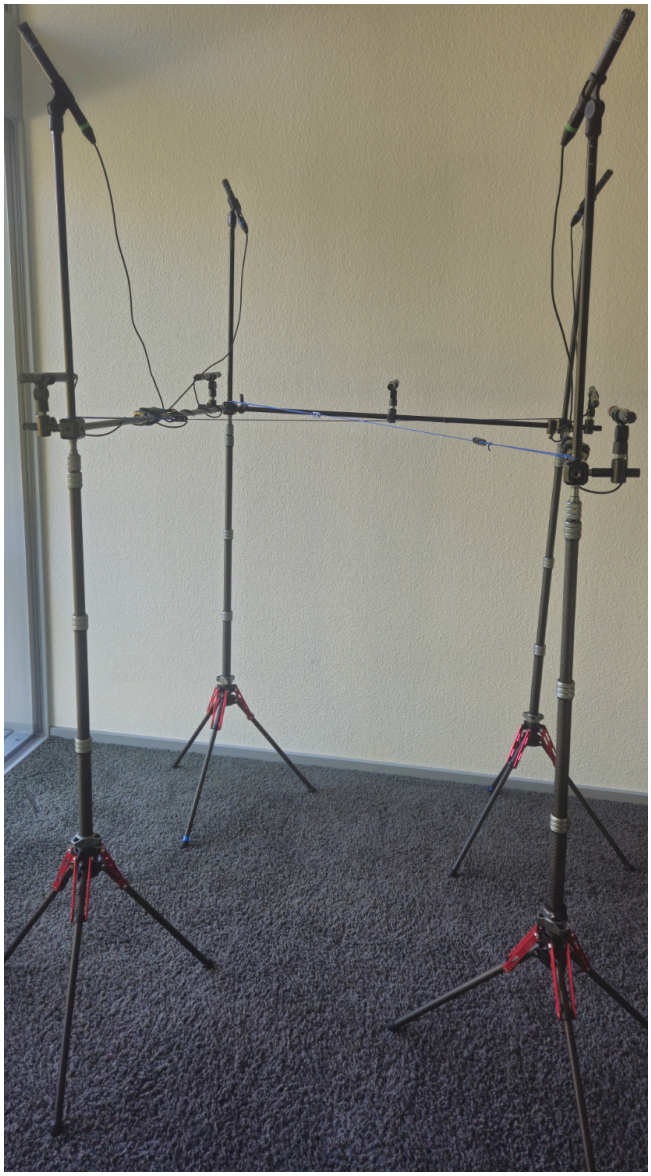
We found that adding two nylon strings across the button square makes it sturdier. This is not necessary, but it may be helpful when you are out in the field with larger wind protection for your microphones and some wind.
If you need it to be more stable, there is an option a little further down that you can consider.

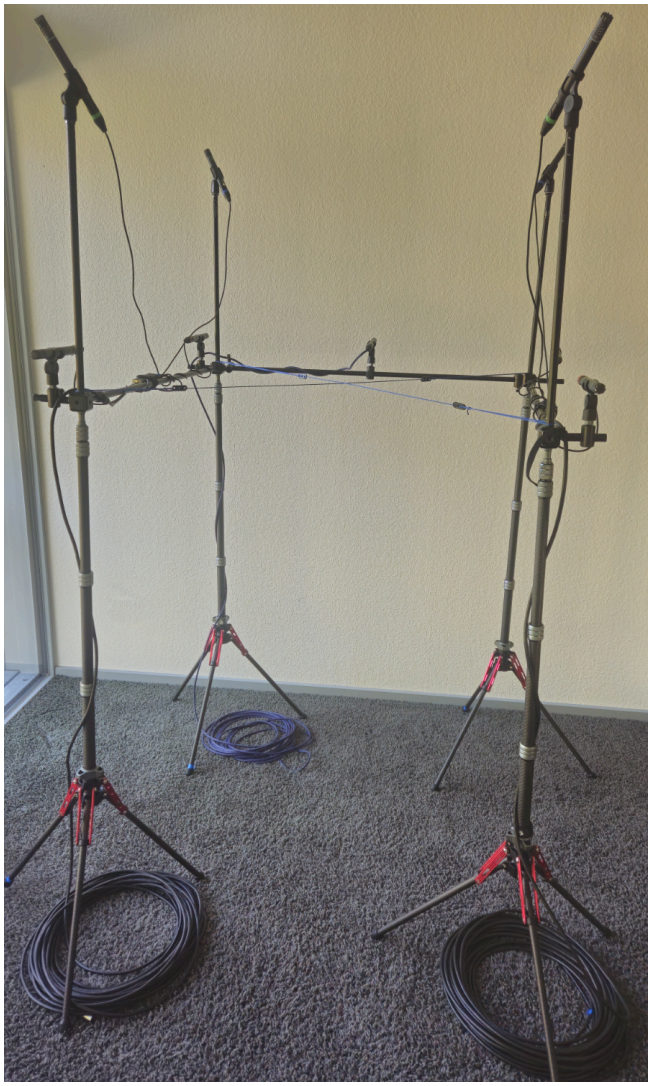
We also installed the microphones and positioned them as required.

Using a tape measure, we made sure that every distance is correct. This requires experience, so we highly recommend practicing before leaving for the venue. Honestly.

We have added the splitters of our multicores to the array. To avoid noise during your recordings, secure them with Velcro tapes. Or what ever is at hand.

We will connect the cardioid microphone in the middle with an extra microphone cable. Feel free to choose whichever microphone you prefer; we like it this way. It doesn’t effect the sound in any way.





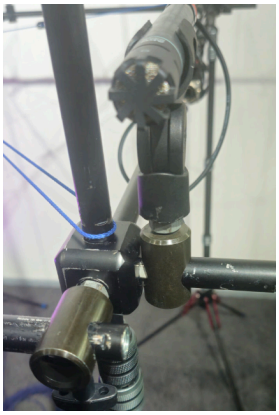
Now, all of the microphones are connected.

In the front, you see the extra microphone cable, and in the back, you see the two multicore cables.

We use two Zoom F8n Pros for recording. They are connected by a BNC cable for synchronization (LTC and word clock). (LTC and Word Clock).

We route all microphones from the button square to one recorder and all height microphones to the other recorder. Choose whatever works best for you.

As always, make sure your batteries are freshly charged and you have extra batteries and/or powerbanks with you.



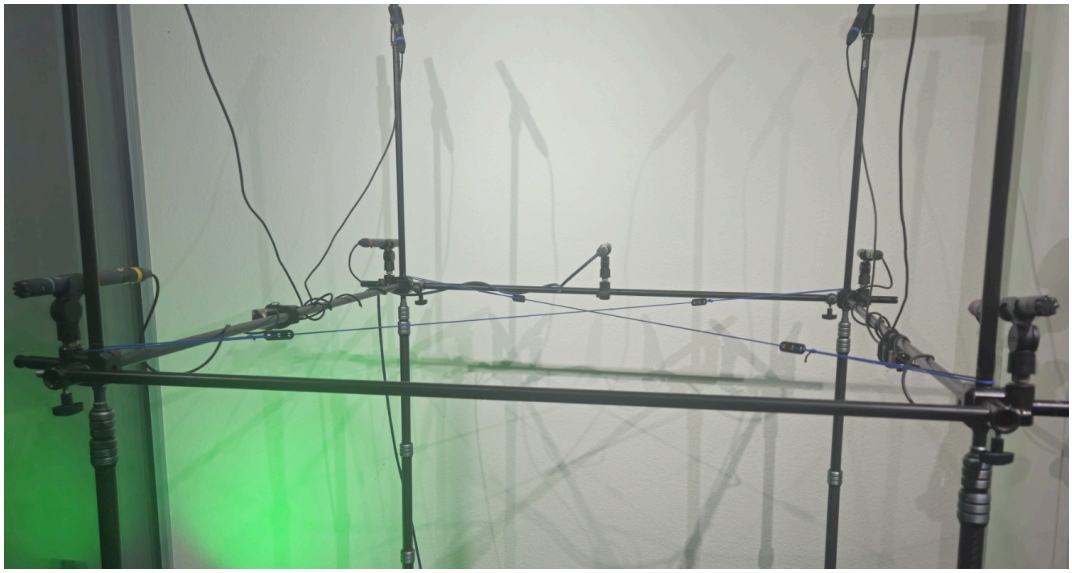


The pictures show a solution for achieving more stability in your array.

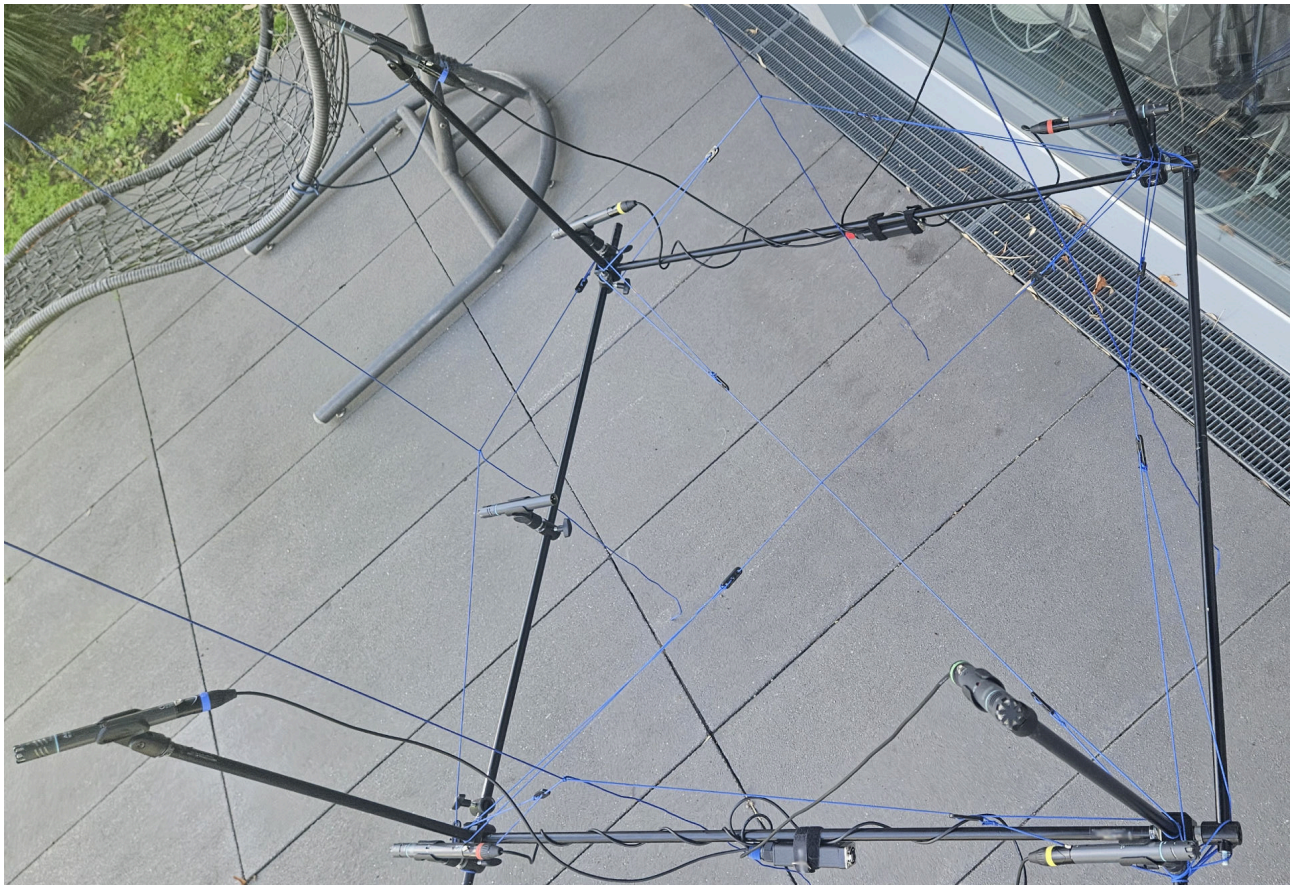
To achieve this, we screwed in two additional rapid adapters in the back cubes and inserted another rod into them; as shown in the pictures above. Then, tighten the screws on the rapid adapters, and your array will become quite sturdy. Now it looks like this.

Wait a minute!

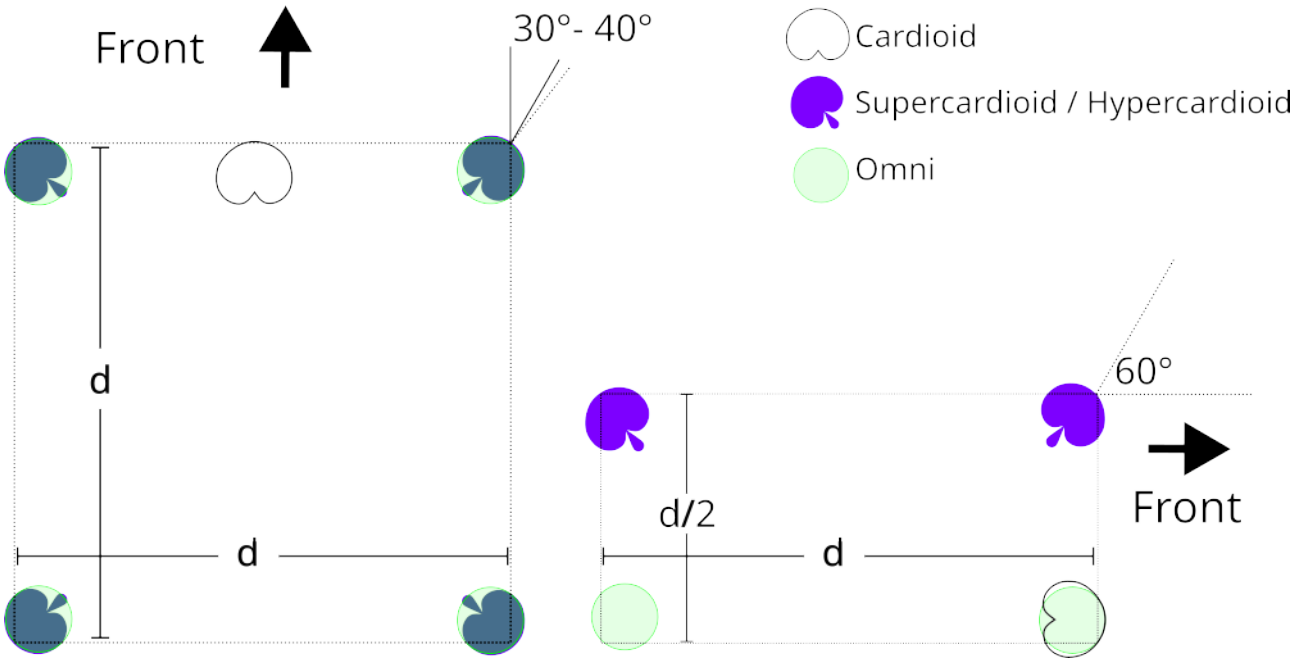
At the request of a very friendly and supportive gentleman, we added some things to make this array flyable.



This is a **PROOF OF CONCEPT**!
Yes, it flies, but you will not be pleased if we ever see you flying this array only on nylon strings above people's heads. Promised!
If you'll fly it over an audience, steel strings are the only correct choice. Period!
And evey screwed connection needs to be secured as well!!



If you want to change the size of the array, you must maintain the ratio between the distance between the microphones in the "button square" and the "height microphones." The height must always be half the distance. It's worth being as precise as possible.



This is all the gear you'll need to build a Bowles array classic. It will fit into a regular 25 l backpack. Your milage may vary depending on your equipment.

If you want to build bigger arrays, you will need more rods and longer cables. But in general this is it!



Have fun by building this very flexible array and make amazing recordings.

This tutorial is provided by the ambisonic.studio team.
It is free of charge and provided as is. There is no warranty or guarantee.
You use it completely at your **own** risk.

If you have any feedback, any idea how to improve things, we would be more than happy to hear from you.