

THE ULTIMATE GUIDE TO

STEREO

RECORDING



JZ MICROPHONES



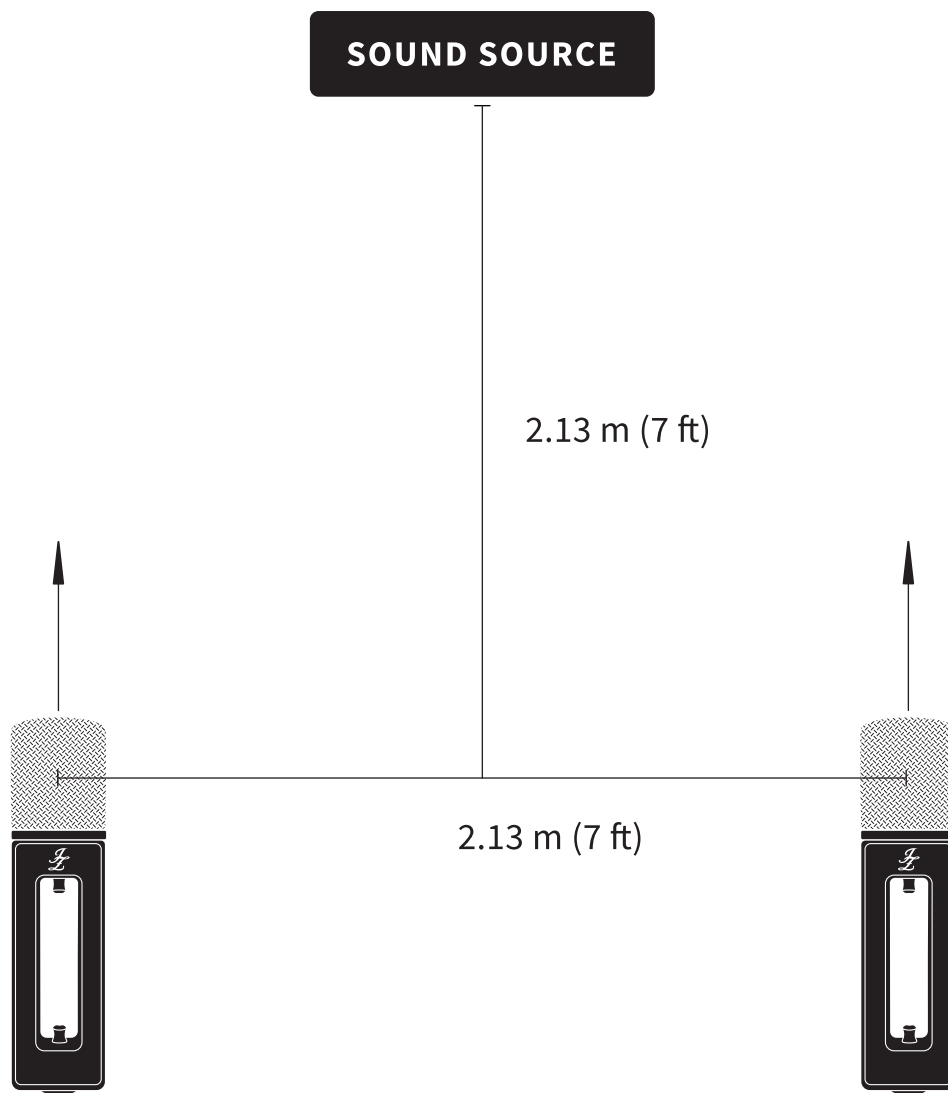
Welcome! In this short eBook you'll find a complete guide to the best known and least known stereo mic'ing techniques that'll help you achieve the results you desire, depending on your session, mixing plan, and 'feel' you're trying to achieve.

As always, our number one rule is making sure you capture the sound source in the best possible way to make sure it's 80% of your work - so with that in mind, make sure to refer back to this in your pre-production planning to achieve the sound you want, how you want to!

Harri Lowe,
JZ Microphones

SPACED PAIR (A/B PAIRING)

Spaced Pair is one of the most common place mic'ing techniques used in everyday recording sessions. Due to the stereo field, this technique is typically found when recording loud sound sources like drum kits, choirs, and more due to the dynamic and pleasing wide feel. Room mic's benefit from this technique more - so than others as the capture of the room is often detailed, and extremely musical depending on the room.



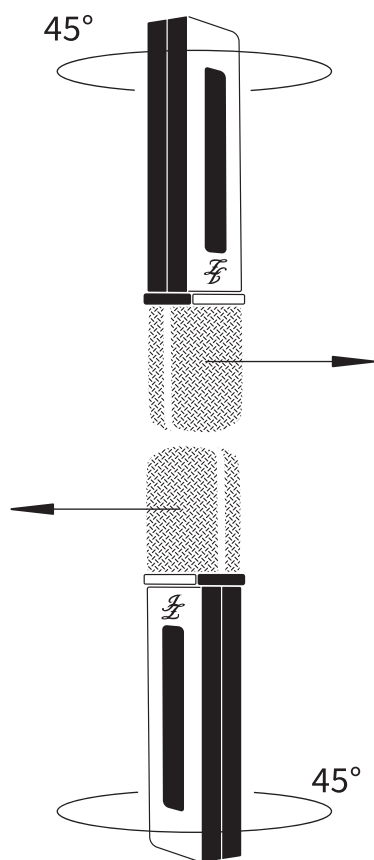
Spaced Pair (A/B pairing)

In order to limit phase issues, however, that can be commonly found when approaching this stereo technique for the first time, I suggest trying the 7ft rule:

- *Firstly, decide on either cardioid or omni polar pattern. This will depend largely on what sound you'd like to achieve - cardioid will give slightly more distinction between the L & R sides of the stereo image and perhaps more clarity individually, and a slightly tighter image, whereas omni will allow a slightly more embellished room sound and captures much more reflections making it slightly more clouded; this can be good in many cases where the room sounds great and you're after a much larger the life sound.*
- *In order to achieve this the distance between the mic's needs to be 7 ft (2.13 m), as well as the distance of the mic's from the source giving you an in-phase stereo picture.*
- *If you can't achieve this, then the 3 to 1 rule dictates that if one mic is for example 3ft away, then the second should be no closer than 3 times that, however experiment and try to aim to have the loudest, most dominant parts of the kit as equally in phase as possible, i.e. the Kick and Snare (this doesn't necessarily mean aiming them towards the loudest parts directly, however!)*
- *Usually to find the best place, I'll walk around the room as the drummer plays, using one ear in particular while blocking the other with a finger to listen out for the place that the Kick and snare drum low midrange carry nicely.-*
- *Make sure not to stay only at head height while doing this, and experiment with aiming the mic's towards the walls or floor to exploit reflections within the room.*
- *The downside to this is that summing to mono can bring about a lot of phasing issues especially on the lower frequencies causing a thin sounding mix, so be wary of this.*

X/Y PAIR

Known as a coincident pair as they typically occupy the same space as each other with their capsules, XY pairings give a focused and tight stereo picture. Pointing the mic's in the opposite direction to the side they are on at a 90 degree angle to each other, they achieve a sweet and musical picture of the sound source as well as an overall brilliant localization of the source:



- *Firstly, both mics need to be cardioid for it to be XY Pairing.*
- *The mic's need to be at a 90 degree angle (right angle) to each other.*
- *This set up typically achieves near total in-phase and rarely has issues with low end falling apart in the mix.*
- *Great on acoustic guitar and other more delicate and intricate sound sources.*

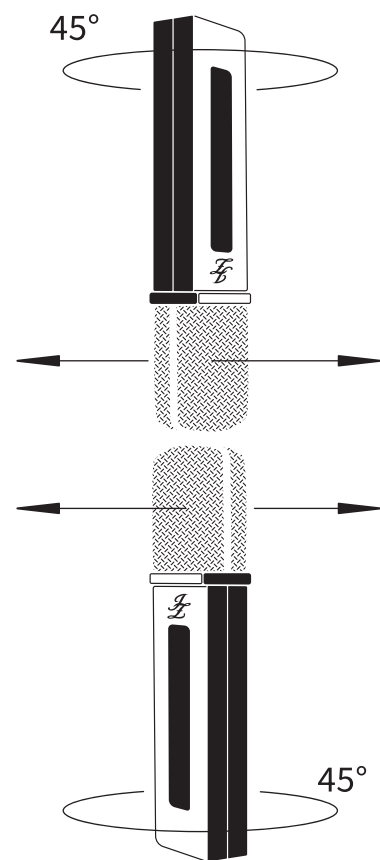
X/Y Pair

The downside is that its stereo field is much tighter, so use on loud sound sources may find less than pleasing results as it won't capture the same width and explosiveness of the room as say a spaced pairing, but is much more reliable say as a choice for overhead stereo mic'ing on drums for example as opposed to a room mic'ing (unless a tighter image is when you're after, in which case there are other techniques such as using baffling to absorb sound around the kit to achieve the result you're after. This is a common place for heavier, intricate, and faster playing on drums for example.)

BLUMLEIN

Similar to the above, the mics are placed however in a near coincident pairing usually one above the other pointed away from each other at the same angle of 90 degrees. The similarities however are only in the way the pairing is aimed:

- *The mic's are this time, Figure of 8 rather than Cardioid. As expected, this achieves a much larger picture of the reflections within the room so use as room mics on a more explosive sound such as drums or percussion is common, however acoustic guitar and more subtle sound sources can benefit from this too.*
- *The Figure of 8 pattern captures the out of phase information behind the mics adding a better sense of realism and space. This is a great technique for beginners as it's easy to get the mic's in phase with each other, with very little adjustment.*
- *Many prebuilt field recorder mics have either Blumlein or more commonly XY spacing. This is also commonplace in early stereo mics from the 70's and 80's.*

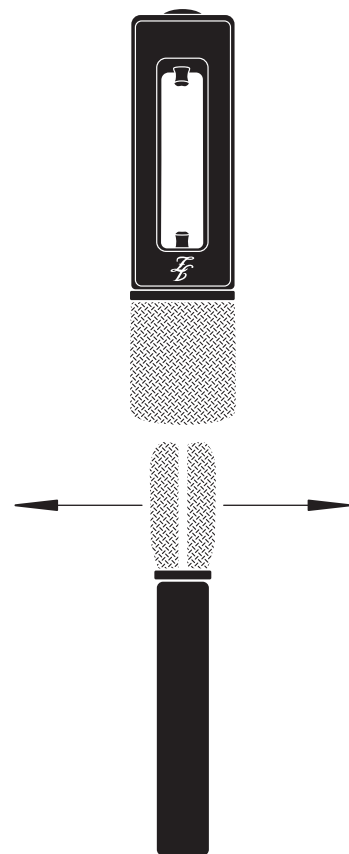


Blumlein

MID/SIDE

Like the XY pair, this is a coincident pairing occupying the same space as closely as possible, however this is where the similarity ends. This is a very common technique within professional studios as it offers the best manipulation of the stereo field. This makes it the most obvious choice for drum room mics, and acoustic instruments such as stringed instruments like a violin and cello quartet:

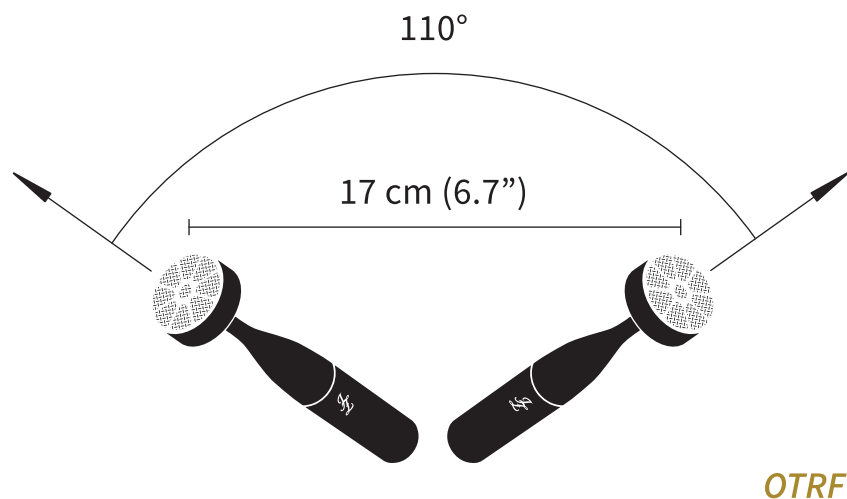
- *The mid image is achieved by using one cardioid mic pointed at the sound source, although aiming a little off the direct line to the source can help you achieve more ‘room’ sound rather than more of the source itself, so experiment.*
- *The side image is slightly more complicated with a second mic in figure of 8 placed above the first mic pointed on a 90 degree axis to the first mic (one mic aimed forwards and one aimed out to the sides, hence the name).*
- *This mic can then be sent to a desk or set of preamps on two separate channels. One has the phase inverted and then balanced to bring to the same level.*
- *If you then group these 2 channels to control them together, you can in turn then balance these channels against the mid channel to raise or lower the stereo field.*
- *The mid channel and side channel mics don't have to be the same, but choosing similar types such as ribbon or condenser will allow you to achieve a much more pleasing result without too many discrepancies between the frequencies (this will happen if say using a dynamic and a condenser or a darker ribbon and a very bright condenser so be wary of your choices).*



MID / SIDE

OTRF

The ORTF stereo technique was created in France during the early 1960s by the Office de Radiodiffusion Télévision Française which was later renamed to Radio France. With more of the width associated with spaced pairs, but the accuracy closer to XY Pairing, this stereo positioning is often seen by many engineers as being the middle ground to capture the overall essence of the source without having to compromise with either the stereo width or clarity within the stereo image:

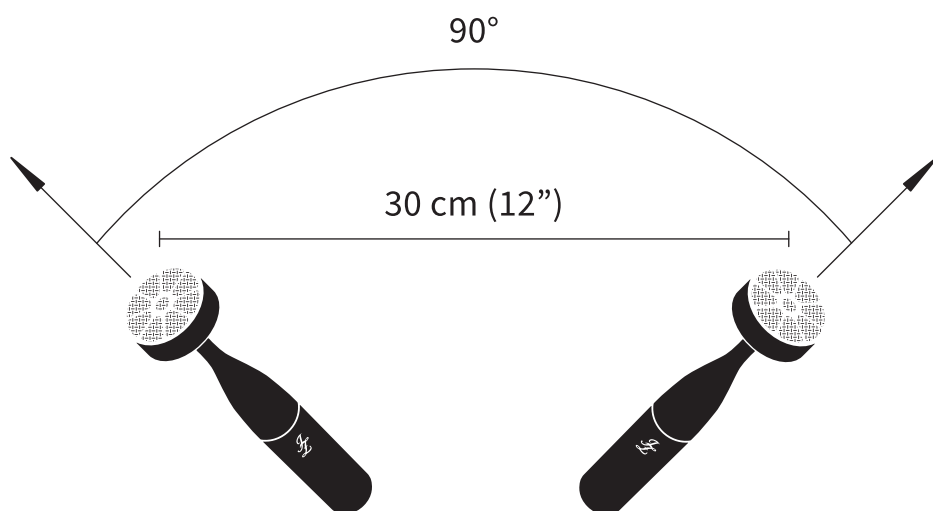


- *Using 2 Cardioid Mics*
- *Angled at 110 degrees, usually away from each other as opposed to crossover like XY Pairings often are.*
- *The width between the capsules needs to be 17cm (6.7"). Do not mistake this distance being on any part of the mics such as the XLR output of the mic - the capsules are required to have this distance in order to find them in phase.*
- *Small diaphragm mics are advised as the off-axis frequency response is much more uniform than that of many large diaphragm condenser mics.*
- *This technique is mainly used for large source sources like orchestra or choir arrangements due to the mics needing to be positioned much further away than that of say an XY pairing. The aim of this technique is a natural, balanced picture of an overall sound source.*

NOS

NOS is another similar technique to the above, this time however, taken from the original OTRF setup, and changed slightly by the Dutch Broadcast Association shortly after its conception in the 60's. This technique is much lesser known as the OTRF design was made so popular, however just knowing this technique allows you to change between them very quickly and decide for yourself on the fly within a studio session:

- *Again, employing the use of Cardioid mics*
- *This time, angled at 90 degrees like XY pairs, but separated by 30cm (12").*
- *This technique allows a much more realistic stereo picture but again is operated on large sound sources like choirs or orchestral setups.*
- *This technique does bode well for certain piano and percussion recordings however.*



NOS

DECCA TREE

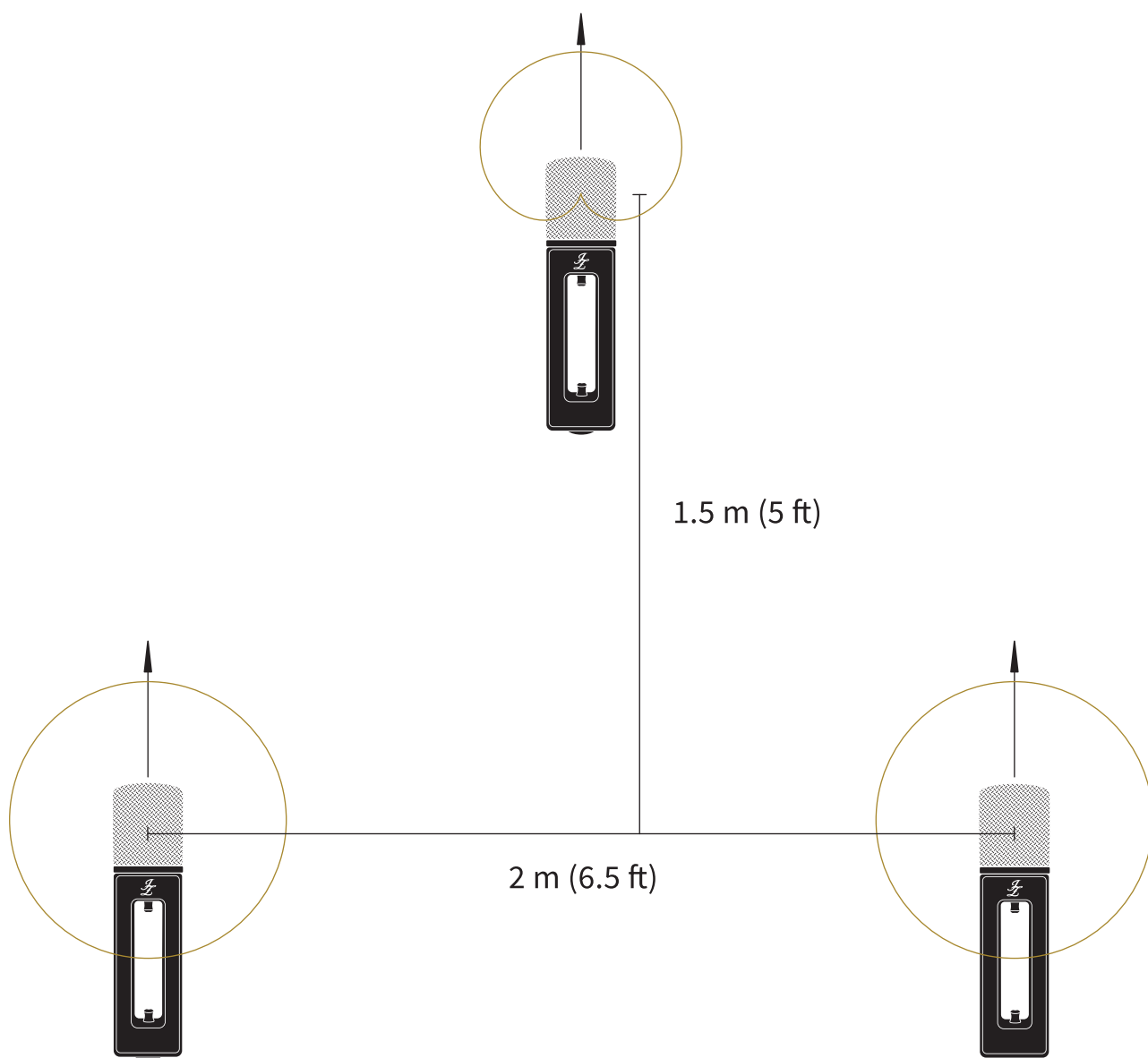
The least known of all these stereo mic'ing techniques, at least in my experience, is Decca Tree. Most likely due to it being more commonplace in orchestral recordings or huge room recordings, such as concert halls or chambers; however, you could easily use this technique in drum recordings, or choral arrangements, even stringed or horn arrangements for example.

Another reason for this being overlooked by so many is due to the typical 'industry standard' set up. Since it's conception in the 50's by Decca Records, who experimented with a new idea while in the early days of stereo recording. During this time, the idea of stereo recording was still very much within the fledgling period of its life, with ideas being thrown around but nothing sticking - until Roy Wallace and Arthur Haddy played with the idea of using 3 microphones, 2 to capture the wide picture with a 'hole in the middle' filled by a 3rd microphone in front of the rear pair to create a triangle, and thus filling the space that was missing in the stereo field. Originally this was done with 3 cardioid microphones, although over time people became less and less satisfied and started playing with the polar patterns, finally settling on one specific industry standard mic, costing roughly \$5000 (each!) so it can be understood why this has been overlooked so often.

However, even without the use of a specific Decca Tree mounting or these super expensive mics, you can achieve an extremely pleasing sound in either the original or modern Decca Tree setups:

Modern Decca Tree

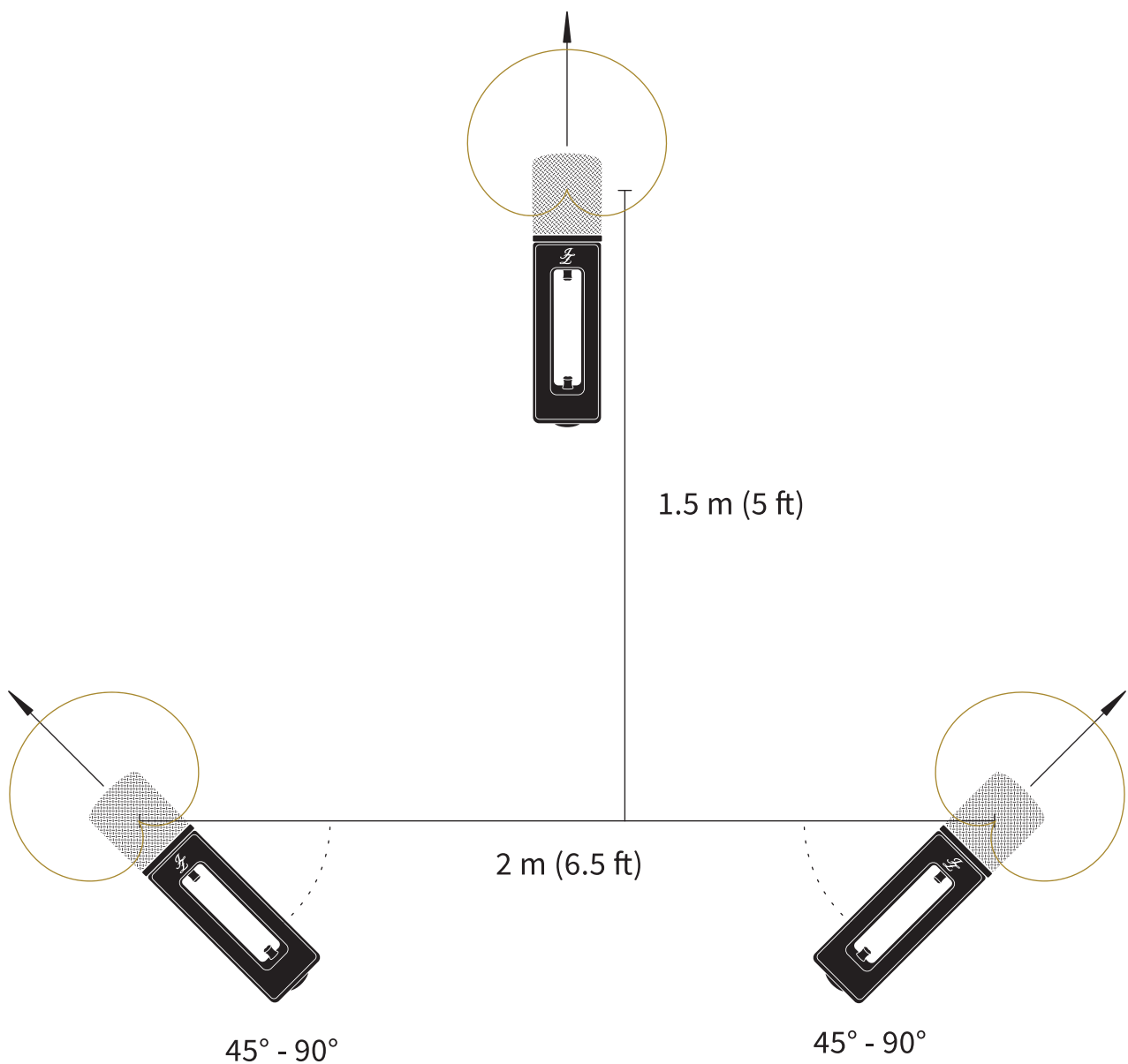
- *In order to set the mics up, you'd need to set up 2 Omni microphones, such as the BH1S as a pair, aimed forward towards the source.*
- *This leaves a void in the middle image of the stereo field, so using a cardioid mic in front of the rear pair pointed at the source, such as the V67, will then allow you to balance the stereo image (similar to how the mid/side image was achieved as we discussed earlier).*
- *The distance between the rear 2 mics needs to be 2 meters (6.5 ft), with the cardioid mic in front by a distance of 1.5 meters (5 ft).*



Modern Decca Tree

Original Decca Tree

- *If you'd like to follow the original setup utilizing 3 cardioid mics (such as 2 V11's and an Amethyst - or 3 of any cardioid microphone), then the angle of the rear pair needs to be pointed outward between 45 or 90 degrees (see the diagram below)*
- *You can adjust this depending on the overall width to the stereo image you are looking for.*



Original Decca Tree

CONCLUSION

Even if you don't end up using the Decca Tree technique after trying it, you've learnt a new sound that may work in another session. Either way, make sure to refer to this eBook during your next session and try out these in your own time to find what works best for the room and set up you have, wherever you're recording - and as always, make sure to share your recordings with us; we love hearing your incredible creativity!