



'NEWS'

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## A TRIBUTE TO THE C12

**I**N 1954, the time of Bruckner's *8th Symphony* performed by Furtwängler, radio stations not only had recently acquired the tools they needed to broadcast events, but also to preserve sound documents, possibly for later broadcast.

With television being still such a novelty, radio was in the process of acquiring highly advanced resources, with several areas of research, in particular frequency modulation and stereophony.

Allow me to examine what happened in France. In the years immediately after the war, the priority was not the quality of the sound, but its transmission. The transmitter network, lying in ruins, had to be rebuilt. This did not prevent the engineers from working at the same time on archiving radio broadcasts. The medium most used by Radio Diffusion Française was the Pyral direct-engraving disc, named after the firm that produced it (over 150,000 sides used in 1947!). A sound engineer with unmatched dexterity was able to record and play back several sides one after the other without interruption. The sound itself is affected by this support: limited dynamic range, somewhat narrow spectrum, surface noise... At the same time, the studios were using the Philips-Miller, an optical recording device. The reader may refer to an old newsletter describing the process. The big innovation was the introduction of the tape recorder in 1947. Did the technical management of RDF — which would become RTF in 1949, incorporating television — have any faith in this? Not sure, according to some reports. This new medium would need some time to catch on.

The first serious recording on tape was made in 1950: Beethoven's *1st* and *9th* symphonies conducted by Koussevitzky. To be frank — and this is just a personal comment — it wasn't a technical success. In the early fifties, 80% of recordings were made on disc, 20% on magnetic tape. By the Spring of 1954, the situation had become the opposite. After a while, the disc was definitively dropped by the French radio.

To compare with other European countries, Germany, Austria, Italy and Luxembourg had already been using tape recor-

ders for some time, in the footsteps of the Reichs-Rundfunk. In England, the BBC acquired the BTR1 tape recorder developed by EMI in 1949.

Let's go back to 1954. The radios therefore had what they needed to secure musical recordings under similar conditions. So why are there so many differences in the way sound was rendered in Berlin, Vienna, Rome, or Paris?

The truth is that what makes a recording 'sound' is not the medium itself — or very little in comparison with an equivalent support (disc, tape recorder, DAT, digital files...) — but what precedes it, and especially the microphone(s). One might almost say: 'Tell me which microphone you're working with, and I'll tell you how it sounds'. This is particularly true considering that radio stations used to work with very few microphones — a single one in Berlin, for example!

These days, radio stations have a vast range of microphones at their disposal, not to mention the fact that more and more of their recordings are subcontracted to private studios, thereby expanding the options available. In those days, radios tended to stick to a few models, undoubtedly, to better negotiate group purchases. And even in a recovering economy, there was plenty of choice. To put it simply, the immediate post-war period brought several top-quality microphones, including, in Europe, Neumann microphones. The good old CMV3, which first appeared at the end of the 1920s, had not aged a bit and was still showing its 'bottle' in studios, reports, theatres, and concert halls, and not exclusively in Germany. The innovation, which came years earlier, consisted of interchangeable capsules on the body of the microphone. This means it was possible to switch from an omnidirectional microphone



The Neumann CMV3, with a cardioid capsule.

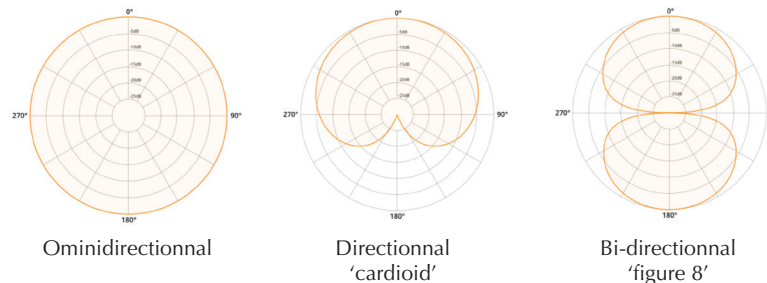
(M7 capsule) to a directional 'cardioid' microphone (M9), or even a bi-directional figure-8 microphone (M8).

Without getting too technical, let's look at a few concepts.

The omnidirectional microphone captures sound from all around it, making it ideal for recording classical music performed in good acoustics. Its polar diagram is therefore a circle, which is a bit overstated because the higher the frequency, the more directional it becomes.

The directional microphone is well named: it picks up mainly what is in front of it, eliminating unwanted reverberation. As its diagram is more or less heart-shaped, it has been given the name 'cardioid'. The engineers even extended the range, varying the degree of directivity from 'wide cardioid' (which tends towards omni...) to 'hypercardioid', with a particularly tight angle.

Finally, with a colourful name, a 'figure of 8' pattern: bi-directional; in fact, two hypercardioids back-to-back.



Back to Neumann. In 1950 the German manufacturer released the M49 — followed soon after by the M50 — initially developed by Nordeutscher Rundfunk. It became one of the most widely used microphones, particularly as it was chosen to equip the famous 'Decca tree', one of the benchmarks for stereophonic recording.

But Neumann was not the only option. Besides American microphones, notably RCAs — which were to equip Rot-Weiss-Rot, the Austrian radio station set up by the American occupation administration — two newcomers were soon to acquire a certain notoriety: Schoeps (1948, Durlach, Germany) and AKG (1947, Vienna, Austria).

Schoeps was to become the favourite microphone of the French radio for many years, but the revolution came from AKG. This company — Akustische und Kino-Geräte Gesellschaft — specialising in high-quality headphones, developed innovative microphones. And in 1953, it brought out the C12, one of the most exceptional microphones ever made.

Manufactured until 1963, with only 2,500 units produced, the C12 became one of the top microphones on the market, both in the studio and for live recordings. Artists as demanding as Quincy Jones made it their own.

This is somehow the ultimate microphone. This condenser microphone is virtually unsurpassed for its fineness of reproduction, for its ability to 'handle' the highest levels but also to capture the most subtle sounds.

But what makes it an outstanding tool is the way it handles directivity. In addition to its 9 patterns, from omni to bi-directional, and all the intermediate levels in between, it provides an unparalleled advantage: the directional pattern is not selected on the body of the microphone, but on a remote box near the power supply in the control room.



The AKG C12, its power supply and the directivity remote box



This meant that the sound engineers no longer had to come onto the stage with a ladder, distracting the musicians, to change the pattern of the microphone used, which was usually suspended quite high; the choice could be made from the control room.

Rot-Weiss-Rot equipped itself with this tool as soon as it came out, and it was used in Salzburg in the Summer of 1953, and recording *Fidelio* at the An der Wien Theatre in October of the same year.

The setup for Bruckner's *8th* (see also next page) is in line with what was already in use at the Musikverein for several years. Two microphones — undoubtedly omnidirectional — were suspended on either side of the conductor, at the right height, while a third — often a cardioid — was placed or suspended in front of the woodwind section, in the middle of the musicians.

Whatever one's assessment of Furtwängler's interpretation of Bruckner's symphony, one thing is certain: rarely has such a degree of fineness been achieved in sound reproduction. The recordings from Berlin in 1949, or even the exceptional recording made ten years earlier in the same hall with the same orchestra, certainly do not contradict this. Listen to the violin (Walter Barylli's) and cello solos from the *Adagio*: while they remain in their right places — in other words, they are not amplified by a spot microphone — they are still perfectly audible, as is the delicacy of their *ppp* phrasing.

Stéphane Topakian  
February 2024

*Information about the post-war RTF comes from the radio archives.*



Musikverein, May 1951: the Neumann



Musikverein, ca. 1952: the RCA





The AKG C12 microphone in broadcasts of operas conducted by Furtwängler:

Above: *Don Giovanni*, Salzburg, Felsenreitschule, August 1953.

Left: *Fidelio*, Theater an der Wien, October 1953.



Right: Bruckner's *8th Symphony*, 10 April 1954. Orchestral layout and microphone placement.

*Orchestra*: 3 flutes, 3 oboes, 3 clarinets, 3 bassoons, 8 horns (horns 5 to 8 also playing Wagner tuba), 3 trumpets (plus one extra), 3 trombones, tuba, timpani, percussion, 2 harps, 16 violins I, 14 violins II, 12 violas, 10 cellos, 9 double basses



Musikverein, 10 April 1954: the three AKG C12

