How does my microphone sound like? … and why?

Helmut Wittek
• The gender question (German)…

Mitreden – der Kirchentag als Diskussionsplattform
Die Teilnehmenden des Kirchentages sind eingeladen, mitzureden und ihre Meinung deutlich zu machen: über Anwältinnen und Anwälte des Publikums und über Saalmikrofoninnen und -mikrofone, durch Planspielen, in Workshops, in Worldlebendige Abstimmungen, bei Cafés, bei Facebook, Twitter und Co. Auch Resolutionen können beim gehobert werden, die Verfahrensregeln dazu finden.
• What makes the sound of the recording:

Sound source
What makes the sound of the recording:
• What makes the sound of the recording:

Sound source

Room

Microphone
- What makes the sound of the recording:

- Sound source
- Room
- Microphone
- Microphone location
• What makes the sound of the recording:

Sound source

Room

Microphone

Microphone location

Microphone mix
Technical aspects for the „sound“ of a microphone:

- Off-axis Frequency responses
- Diffuse Field Frequency response
- 0° Frequency response
- Microphone Position
- Directivity
- Stereo Quality
• Technical aspects for the „sound“ of a microphone

- 0° Frequency response
- Off-axis Frequency responses
- Diffuse Field Frequency response
- Microphone Position
- Directivity
- Stereo Quality
0° Frequency response:
- www.hauptmikrofon.de/audio/micandroom.html
• Technical aspects for the „sound“ of a microphone

- Off-axis Frequency responses
- 0° Frequency response
- Microphone Position
- Directivity
- Diffuse Field Frequency response
- Stereo Quality
• Comparison Large ⇔ Small Membrane
• Comparison Large ⇔ Small Membrane
• Comparison Large ↔ Small Membrane
Technical aspects for the “sound” of a microphone

- 0° Frequency response
- Off-axis Frequency responses
- Directivity
- Microphone Position
- Stereo Quality
- Diffuse Field Frequency response
- Diffuse Field

- Omni
- Wide Cardioid
- Cardioid
- Supercardioid
- Figure-8
- Shotgun
- „Super“-shotgun
- (Half) Supercardioid on boundary layer

Demo: ORF Richtmikrofone
- Diffuse field-frequency response

Omni MK 2
Cardioid MK 4
Supercardioid MK 41
Shotgun CMIT 5
Shotgun 2\textsuperscript{nd} order
SuperCMIT
• Same ratio of direct and diffuse field:

MK 41  MK 4  MK 2S
SuperCMIT/CMIT
- Distance factor
• Technical aspects for the „sound“ of a microphone

- Off-axis Frequency responses
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SCHOEPS Mikrofone
Comb filtering, boundary layer:

1: ... U54
2: ... abgesprochen werden
3: ... vorgenommen werden
4: ... sein muss.
5: ... zulässig.
6: ... entnommen werden.
• Technical aspects for the „sound“ of a microphone

- Off-axis Frequency responses
- Diffuse Field Frequency response
- 0° Frequency response
- Microphone Position
- Directivity
- Stereo Quality
XY

- compact
- “Classical” Cardioid-XY has a small stereo width and a large DFC → it can sound boring
- Can sound much better with supercardioids
ORTF

- relatively compact
- very good imaging
- open and nice room sound
Quasi-ORTF

- Flexible recording angle
- good imaging
- open room sound
A/B

- Not compact, $d \geq 40$ cm
- Often preferred sound colour
- Open room sound
- Average imaging quality
• Variable Diffuse field
e.g. Polarflex technique
  - Mix Omni and Fig-8 in three frequency bands
  - Variation of the diffuse field response
Shotgun or supercardioid?
Shotgun or supercardioid?

CMIT 5

CCM 41
- Microphone Showroom: [www.schoeps.de/showroom](http://www.schoeps.de/showroom)
• Psychological aspects for the „sound“ of a microphone

Ref: „Einfluss der Mikrofonfarbe auf die klangliche Beurteilung“, HdM 2009, Kim Kristin Schucker
New multichannel sound formats extending 5.1 with height channels are adding the third dimension to recordings. They provide a much wider range of spatial sound effects and allow more realistic spatial reproduction in terms of direct sound, early and late reflections, reverberation and ambiance sound.

Microphone and Room (Sound Demo)
Written by Administrator
How is the "sound" of a microphone created? We know that every microphone has its distinct signature, depending on its responses in the free and the diffuse field and some other properties like nonlinearities and the proximity effect.

An analysis of this signature is allowed by the following recordings. We have recorded a male speaker with 8 microphones in 6 different rooms, simultaneously! This was done by repeating the recording in each room very similarly.

Now, you have the chance not only to switch between the microphones in one room, but also to switch between rooms using the same signal and microphone. The parameter "room" has been labeled! Note which influence the room has and how the different microphones transfer the room.

Last Updated on Thursday, 07 May 2015 08:16

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