Tony Faulkner's parallel AB figure-eight microphone pair

In English and American "Audio Engineering Handbooks" you find for this stereo main system (array) with two microphones the following of the theory around it:

Faulkner Phased-Array System

UdK Berlin
Sengpiel
04.93
LaufSt

Invented by Tony Faulkner, this method uses two bidirectional (figure-eight) microphones aiming straight ahead with axes parallel and spaced 20 cm = 7.874" apart (Figure 4-22). The plane of maximum path difference coincides with the null in the directional polar pattern of the microphones. Since the microphones are aimed forward rather than angled apart, you can place them farther from the ensemble for a better balance. This distant placement also lets you place the microphones at ear height, rather than raised. Faulkner says that the array is not mono-compatible in theory, but has presented no problems in practice.

Sometimes Faulkner adds a pair of omnidirectional microphones 2 to 3 ft (60 cm to 90 cm) apart, flanking the figure eights. These outriggers add ambient spaciousness.

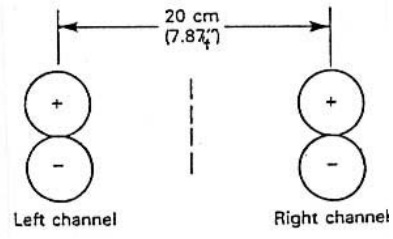

Figure 4-22 Faulkner phased-array system

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Note, that a variety of people and organizations have their own proprietary variations and theory on these techniques. Choices of pickup pattern, spacing, or included angle have all been altered. Be willing to experiment with variations, as did Tony Faulkner.

Tony Faulkner. Developed by a British recording engineer, this configuration uses two bidirectional microphones facing directly forward toward the sound source, spaced 20 cm apart (Fig. 6.46). This technique combines much of the coherence of the Blumlein technique with the openness afforded by the time (phase) differences resulting from the spacing between the microphones. In addition, Faulkner's recommendation that the microphone pair be placed farther back from the sound source than is common with other coincident techniques provides a more natural balance between near and more distant elements within that sound source.

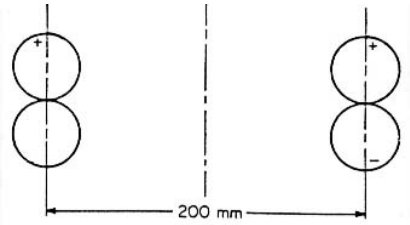

Fig. 6.46 Faulkner configuration

Do you want to know more of this interesting stereo main microphone system? You find an informative article by the inventor in the audio magazine "Hi-Fi & Record Review, July 1981".

http://www.sengpielaudio.com/TonyFaulknerPhasedArray02.pdf
http://www.sengpielaudio.com/TonyFaulknerPhasedArray03.pdf
http://www.sengpielaudio.com/TonyFaulknerPhasedArray04.pdf

After having read this three page article you can test yourself if you have understood everything by answering the following questions:

Questions about the article of Tony Faulkner: "A Phased Array"

1. How large is for Tony Faulkner's Phased Array System the recording region (recording angle), to hear an orchestra (sounding body) equally distributed from loudspeaker to loudspeaker?
2. With which level (sound pressure and not "intensity", how you can read there) the whole left and the whole right signal will be recorded in comparison to the middle (center) signal?
3. How much is the level when the sound incidence angle is ±90° in comparison to the 0° angle (main axis)?
4. Why do you need a mono center support made from the left and right signal?
5. How does the circuit (schematics) for the echo send way function?
6. What would be the difference by not using the center equalizer, making the loudspeaker basis (spacing) narrower by using pan pots?
7. How are the low frequencies equalized and why?
8. Why is the inter-ear distance of 20 cm (8") for the microphone basis (spacing) taken?
9. What does the "inverse-square law" (middle of page 1 of the article) mean and what is there squared inverse?
10. In Fig. 2 you read: the "solid angle" is close to 120° and at a far distance is at 60°. What does this mean?
11. Is it good that the XY figure-eight microphone system (crossed pair) in Fig. 2 is positioned so close to the orchestra and will not the instruments at the sides (double basses) are recorded of the wrong anti-phase side quadrant?
12. How exact the microphone array in Fig.4 will function like the high resolution radio antennae for satellites and radar?

Review in English: http://www.sengpielaudio.com/TonyFaulknerPhasedArray06.htm