# About the Author
# Gene Weed

Gene Weed is a veteran Recording Engineer whose career has spanned over forty years of service to the film and sound industries. He has published several books and articles in science, engineering and history.

His historic article first published in the October issue *of Recording Engineer Producer* (*RE/P*), revitalized a lost art pioneered by British scientist Dr. Alan Blumlein, in the 1930's.

By using separate microphones along with a remote Sum & Difference Matrix for coincident stereophonic recordings, his invention soon became universally adopted in every film and sound stage worldwide.

Today, Gene is semi-retired living in Arizona. He continues his research and development with acoustics and sound technology through his groundbreaking research in vinyl restorations. He is active as a consultant on many film projects with *Zaki Gordon Institute of Independent Filmmaking* in Sedona, AZ, and writes articles for many magazines. His re-release of his 1987 book, "On Air" has currently been published in hardback and is also available for download at the STUDIO 57A bookstore.

Gene can be contacted at (928) 202-4336.



This article is condensed from the book, *ON AIR*, and used with permission.



# About Cascade Microphones

The Cascade Microphone Company is located in Olympia Washington, over-looking the beautiful Puget Sound. The name, inspired by the Cascade Mountain range, is fast becoming recognized in the Pro Audio industry.

Since its inception, Cascade Microphones' goal has been to offer a high-quality product at an exceptional value. Cascade Microphones are hand-built and are represented by a line of high quality professional studio-grade condensers, vacuum tubes, and ribbon microphones that rival the best of the best.

We work closely and diligently with our manufacturing team on a day-to-day basis. Our product designs and modifications are what make Cascade Microphones stand out from the rest.

Before leaving our shop, each microphone receives a final inspection by Cascade Microphone's Chief Executive Officer, Michael Chiriac.

*"We want our customers to be completely satisfied and comfortable with their investment."*
–Michael Chiriac, CEO

## CASCADE MICROPHONES

**3720 Gravelly Beach Loop NW**
**Olympia, WA 98502**
**Phone: (360) 867-1799**
**Fax: (360) 867-1793**
Email: sales@cascademicrophones.com

# HOW TO USE OUR MICROPHONES

**MICHAEL CHIRIAC**
**GENE WEED**

CASCADE MICROPHONES

# A Guide to Recording in MS

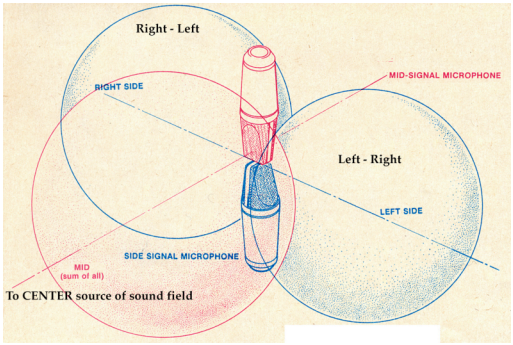
## RULE ONE

*"The simplest methods of recording always produce the best sound. This includes the exact placement of the microphones relative to the musician's sound field."*

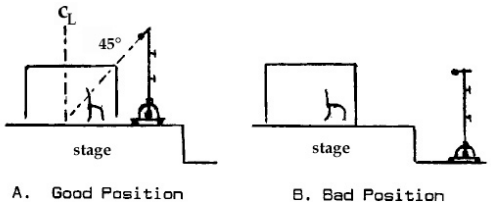
*—Gene Weed, RE/P, October 1977*

## STEP ONE

Place your Blumlein array directly in the center of the subjects that you plan to record. Extend the microphone stand as high as possible and shoot for about a 45º angle to cover all the instruments. This will produce the best results.




*Above patterns should cover the entire source.*




*Adjust the microphone's angle as above to center its main lobe on the center of the instruments*

## STEP TWO

Connect your microphones to a quality balanced preamplifier or mixer that is capable of producing a minimum of 55dB of low-noise gain. Connect the output of the preamp or mixer to a multitrack recorder. Do not use compression, expansion or maximizing at this time.

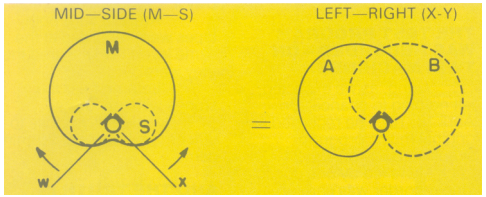
Set the Mid mic to the left channel and pan it fully to the left. Next set the Side mic to the right channel of your recorder and pan it fully to the right. That's it; you will decode these tracks later.

## STEP THREE

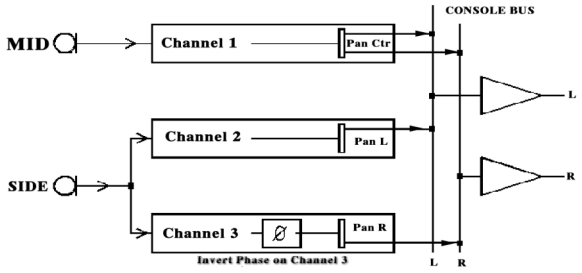
While tracking your recording make sure all your levels in the microphone chain are not clipping. Do not 'ride' the gains during the recording process. Test them first in rehearsals. All levels should be kept low to prevent any possible clipping. As a general rule, use about a - 20dBm to a max of -10dBm RMS value on each channel. We will adjust this later in Postproduction.

## STEP FOUR

You are now ready to *Decode* and adjust these Mid-Side signals to an XY or Left and Right stereo image as below.




*To accomplish this you will need a mixer with a minimum of three channels, or a computer with an audio interface that includes mic preamps, and a Multitrack software program installed.*




*The MS to XY Matrix decoder*

## STEP FIVE

You're now ready to adjust the final stereo image. To accomplish this, you will use your computers Multitrack software, to transform the two MS fields. Referring to the diagram, pan Channel 1 to the center (*this is the Mid channel and is mixed to both L & R channels*). Next, pan Channel 2 fully to the left. You will want to create a third track we call Channel 3. This is done by simply copying Channel 2, and paste it to the new track. In effect this will contain the *difference* signals once it is inverted. (*See, MS to XY Matrix decoder*).

Pan Channel 3 fully to the right, and Invert the phase on this channel only. You're now ready to transform this Blumlein Effect by mixing Channels 1 through 3 into your final XY stereo image.

## STEP SIX

Postproduction of your music can now be done, including any compression, limiting, expansion and normalization to standard CD levels (-10dBm).

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*You have purchased one of the most accurate microphones available today for Mid-Side Recording. These ribbon motors are unparalleled in Phase, Frequency and Performance —bar none.*

–Gene Weed

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For more information and an in-depth treatment of this recording technology, please visit STUDIO 57A bookstore at www.lulu.com/STUDIO57A


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