Stereophonic Sound Systems:

Today, the stereophonic (*aka* "2.0") sound reproduction system is the most popular, and perhaps also the most successful spatial-temporal hi-fi sound reproduction system. There are many ways that have been developed over the years for the *recording* of stereophonic sound. Early experiments with the recording of stereophonic sound took place in the 1930's, carried out by Harvey Fletcher and colleagues at Bell Labs in the U.S. and by Alan Blumlein and colleagues at EMI (Electric and Musical Industries, Ltd) in England. The BBC broadcast the first stereophonic recording in December, 1925. Walt Disney Studios ***Fantasia*** (1940) was the first commercial motion picture to have stereophonic sound. We list/describe various microphone arrangements that have been developed and used for stereophonic sound recording:

A.) The ***X-Y system*** uses a coincident pair of cardioid-pattern pressure microphones with their symmetry axes at an opening angle of 135^o.

B.) The ***Stereophonic system***, or ***Blumlein pair*** uses a coincident pair of bi-directional, figure-of-eight pattern {*i.e*. ***differential*** pressure} microphones with their symmetry axes at an opening angle of 90^o.

C.) The ***MS (midside) system*** uses a coincident pair consisting of one forward-pointing cardioid pressure microphone and a sideways pointing bi-directional/figure-of-eight/***differential*** pressure microphone. The ***sum*** and ***difference*** of the signals output from these two types of microphones are recorded as the right and left stereo channels.

D.) The ***ORTF system*** uses a nearly-coincident pair of cardioid pressure microphones spaced ~ 16.5 *cm* apart (the same distance as the typical/average human ear separation distance) with their symmetry axes at an opening angle of 110^o. ORTF is the French broadcasting system. In a stereophonic recording/listening test held several years ago, the *ORTF* system was judged to give the best results overall.

E.) The ***NOS system*** uses a nearly-coincident pair of cardioid pressure microphones spaced ~ 30 *cm* apart with their symmetry axes at an opening angle of 90^o. NOS is the Dutch broadcasting system.

F.) The ***A-B***, or ***Spaced-Pair system*** uses a pair of microphones spaced several feet apart. The microphones can have any response pattern, however omni-directional pressure microphones seem to be the most popular. Note that if the microphone spacing is too great, it tends to give an exaggerated stereo effect, which increases with increasing mic separation.{The ***Painkillers*** record their live performances using this method, courtesy of *A-Roosta Records* →}

G.) The ***OSS (Optimal Signal Stereo)***, or ***Baffled-Pair system*** uses two omni-directional pressure microphones separated by ~ 36 *cm* with a disk-shaped baffle in between them. The disk-shaped baffle creates a sound shadow, shielding each microphone from the other, and is often a hard disk ~ 35 cm in diameter with ~ 1 cm sound absorbent foam on each side of the disk, also known as the Jecklin disk, named after Jürg Jecklin {one-time chief sound engineer of Swiss radio}. The two omni-directional microphones are spaced ~ 36 *cm* apart (~ 2× the human ear separation distance) with the symmetry axes of the microphones parallel to each other, and parallel to the plane of the disk.