

CHOOSING AND USING MALLETS

The art of using mallets is not as easy as it looks. The use of mallets with handbells has added a multitude of new sounds to the handbell spectrum. The abuse of handbells with mallets has created one very large headache for handbell manufacturers. In addition to stress fractures appearing on the strike side of the casting caused by "marts from heaven", large bells are now being returned with stress fractures on the top of the casting usually caused by always striking the casting with a mallet at the 'waist' of the handbell, the thinnest part of the casting. There are several mallets on the market for bass bells that are fiber wound around a thin circular form that make the mallet head **not round**. The angle at which these mallets strike the bell put the contact point of the mallet at the edge of the form where the fiber wind is the tightest and thinnest. Over a period of time, mallet strokes at high velocity with these mallets will damage the casting beyond repair even if the contact point is near the "lip" of the casting. The scenario could be compared to "marting" a bell on the foam pad near the edge of the table - the casting making some contact with the edge of the table.

The mallet sound is affected by 1) ringer; 2) brand of handbells; 3) brand of mallet as well as size and shape of the mallet head, 4) hardness/softness of the mallet head; 5) arm stroke (velocity and intensity), 6) foam padding [rubber vs. synthetic]; 7) pad cover [cotton, velour, velveteen, polyester, cotton blend or cotton corduroy]. 8) a layer of material between the foam pad and the table top ,9) the foam is covered like a couch pillow, 10) the foam is covered and constrained by a muslin cover to attach it to a table top, 11) table top [material is hard and/or shiny/finished (sizing added for stiffness) vs porous and unfinished]; 12) size of the room; 13) acoustics of the room; 14) temperature and humidity of the room; 15) choir location in the room; 16) number of people in the room in addition to the ringers; 17) kind of clothes being worn [summer vs winter]. Final mallet choice should be made in the room where most people will hear the ringers.

FOAM: Synthetic foam is hard and non - pliable. Synthetic materials reflect rather than absorb sound. There is no "give" - the bell casting cannot "nest" to assist table damping during bell changes or use of table techniques. Bells will roll. Rubber foam comes in various densities (softness) depending on the amount of air space in the foam. The more air space in the foam, the softer it is. The softest foam will allow the casting to "nest" when table damped, helps control the degree of roll and assists with the amplification of sound needed for mallet, mart and other table generated techniques. **Foam purchased at an upholstery shop that is used for cushions and furniture backs for padding and support is not soft enough.** Handbell choirs should purchase the softest rubber foam available from their local handbell dealer or a rubber specialty vendor.

TABLES: Ringers tend to lean against the table. A hard, shiny table top allows pads, especially those covered like pillows to slide. A shiny, hard table top increases the movement of the pads. The shiny top also reflects sound. Plywood makes the best table top. It is porous and assists with the amplification of sound if it is not sealed. Sand the plywood smooth but **do not** finish the top with lacquer, shellac, varnish or paint. Lay the uncovered foam on the table and cover both the pad and table with a hood of pinwale corduroy - wales running the **length** of the table. The sides of the hood should be 6 – 8 inches wide which will allow their use without attaching table skirts. Pieces of foam can periodically be vacuumed for dust or washed to eliminate dirt. The few little pieces that "disappear" during transportation, set-up or storage will not affect the consistency or function of the foam. However, when it begins to "sugar" (usually caused by storage in a hot dry place), it should be replaced. With proper care, foam can last 25 years or longer.

TABLE COVERS: Polyester is the "hardest" of materials. It is wonderful because it does not wrinkle when packed or folded but it reflects rather than absorbs sound. Velour, velvet and velveteen are made of polyester or other synthetic blend.. Even fabrics marketed as cotton i.e. velour, velveteen, velvet, may have only a small percentage of cotton in the weave. Plain cotton is a very porous material that will absorb sound but will allow the bell to roll during bell changes. Cotton pinwale corduroy with the wales (8 - 11 per inch) running the **length of the table** will absorb the sound and still keep the bell roll to a minimum as the edge of the casting (lip) will often "seat" itself between the wales.

MODEL SOUND: Every handbell director should have a "model" choir sound that they hear when they think of handbells. That sound should be evenly matched in timbre and volume throughout the entire register of the bell set. Do you want a full rich sound made up of the fundamental pitch with the overtones in their regular arrangement within the pitch? Do you want a sound that is 30 – 50% overtones (medium clapper setting) or a sound (hard clapper setting) that is mostly overtones? Achieving volume (soft, medium and loud) by setting the handbell clapper to medium or hard is a myth. Changing the setting of the clapper head will affect the volume but it has more effect on the quality of sound coming from the handbell when it is rung. The medium and hard settings of the clapper head give no core/center to the sound. especially noticeable in the lower bells. The fundamental sound that controls the organization of the overtones has been weakened. The sound becomes a "whang". The bells of the 6's, 7's and 8's become brilliant and strident – not a pleasant sound to listen to for a long period of time. The result sounds like tuned kettles and soup pots with beaters or rain on a tin roof. This will also happen when using mallets that are too hard for the bell. You may not be damaging the bell but are destroying the sound. A louder sound is better achieved by intensity and velocity of the arm stroke with the clapper set for maximum swing inside the casting without causing back ringing or ringing when it is table damped. It is better to have the ringer adjusting to the bell response than adjusting the bell to fit the ringer especially when more than one choir is using the same set of bells.

General information; Instruments when played produce a fundamental pitch with blended overtones that enhance the sound and identify the instrument producing the sound. The fundamental pitch of the bell should dominate the sound with the **overtones in support**. All of the pitches should blend - not overpower one another. The listener should not be able to detect a change in timbre or sound when a ringer changes hands or the sound passes from ringer to ringer and octave to octave provided the dynamic marking is the same. The same should apply to the mallet sound. It should be matched and blended throughout the entire bell set. Mallets on handbells should sound like a soft or mezzo, or forte pizzicato like string section of an orchestra. The basic sound should be round, fat and full. Mallets are not lethal weapons or a means to work out frustration. They should produce a blended, musical sound.

BLENDED SOUND - cannot be achieved by a single brand of mallets. Each time the material (yarn/covering, hardness and shape) of the mallet head changes, the sound changes. Careful mixing of mallet brands can eliminate the sound difference. As the size of the bells change, the hardness and covering of the mallets should change. The rule for choosing mallets is, **the larger the ball, the softer the mallet and the more of the mallet head that should touch the casting.** The recommended pitch range on the handle or shaft of a mallet is one person's (company's) idea about where in the set that mallet should be used. **Let the sound that you want to hear rather than the recommendation on the handle/shaft and the other variables determine the mallet choices you make for your choir.** If you are purchasing mallets for the first time, ask your local handbell dealer to send a pair mallets of each brand (Malmark, Tru-Timbre, Schulmerich) that will work for your octave range on 30 day approval. If you want to expand your set, tell the dealer what you already own by brand name and color of mallet head. The dealer should be able to send mallets on approval to fill in the spaces, Handbell mallets are usually sold by piece – **not pair**. You may also use many of the mallets available for keyboard percussion, Orff instruments, and Rhythm Band percussion as long as they will not damage the castings.

To blend - begin with the sound you want to hear from your lowest and highest bells. Work from each end of your set to the middle and make the final adjustments there. Be sure to check the shape of the mallet head and where it **touches** the casting. Is the handle/shaft firm or does it have some "give" to it? Is the mallet "balanced" within reason or top heavy? How long is the handle/shaft? A mallet with too much "give" is deceiving to the ringer. It does not help control the velocity and dynamic of the stroke but encourages a faster, harder stroke. Does the shaft of the mallet vary with the size of the head? Most mallets for bass bells tend to be top (head) heavy with small shafts/handles. It is not possible to balance mallets like sticks for a snare drum are balanced (or a low and higher sound for a matched pair). The head, handle/shaft diameter and length should all be relative. I.e. large head, needs a larger diameter handle with length to comfortably reach the bell casting where the mallet strike point should be.

To check your choices, start from the middle range and work back to the highest and lowest bells. Then experiment with your choices. Once you have decided on the mallet combination, write down the combination. Ringers can help make the choice by having some of them listen while other use variations of mallets on a

given passage. Use a number of passages with various characteristics as you make your choice. If the line is a melody line, should it have a brighter sound? Look at the “thickness” of the accompaniment and the range in which it occurs. Is the melody line above or below the accompaniment? Blend the mallets from the melody line, especially if the piece uses mallets to the low bass. In all of these instances, the ear should be the determining factor, not the pitch range printed on the mallet handle/shaft. When you arrive at the satisfactory sound, write down the combination and change groups of ringers so everyone gets to ring and listen. Rehearse several weeks with the chosen combination to be sure that you are satisfied with the choice. Once you have chosen your basic set, you can add mallets for variety as funds become available.

For reference, a complete all-purpose set of mallets for five (5) octaves of bells (2 per ringer) may be purchased for \$ 300.00 - \$ 600.00. The choir should have extra middle and upper range mallets for melody lines, accompaniments and suspended bells. Starting on a budget? Each ringer should start with one mallet. As funds become available, add mallets so there are three for every two ringers and then 2+ per ringer.

There are eight factors to remember when choosing mallets:

- 1) the larger the bell, the softer the mallet – the more of the head should “touch” the casting
- 2) the pitch range on the handle/shaft is only a starting point for choice;
- 3) a set of mallets of entirely one brand does not a matched set make;
- 4) some percussion mallets (timpani, vibes, marimba) also work;
- 5) most choirs use mallets that are too hard;
- 6) mallets that are too hard bring out the overtones rather than the fundamental sound of the bell.
- 7) look at the “wind” of the mallet head. If one strand of the wind breaks, will the entire mallet come apart?
- 8) mallet handles too long – depending on material, shorten them with a coping saw; sand the cut with fine garnet or sandpaper to avoid snagging clothes or scratching skin, replace the sleeve if there is one.

THE “KLINK” SOUND: One of the mallet manufacturers has added a 1-2 inch rubber sleeve on the mallet shaft directly below the mallet head. This is a nice idea to prevent the "klink" sound when the shaft strikes the casting. However, the sleeve has destroyed the balance of the mallet making it harder to control. The "klink" sound can be avoided by having the ringer step back from the table a half or whole step. If the shaft and handle are small, a rubber sleeve (tubing from the hardware store) can be used to cover the shaft and/or handle to avoid “klinks” without drastically changing the weight of the mallet.

USING MALLETS; In order to make a sound, the bell casting must vibrate. When bells are laying on the table, the ability to vibrate is restricted by the foam pad and the table cover. The tendency of most ringers to get sound and volume out of the bell is to use a very firm, fast stroke straight down on the casting. This may get a louder sound but it does not carry and may not be pleasing to the listener. This hammering motion does not "encourage" the bell to vibrate but instead, pushes the casting into the pad restricting the ability to vibrate. The hammering motion provides the ringer with a visual that they may interpret as being impressive to the audience (grandstanding) but is distracting, makes little or no musical contribution to the group sound and will damage handbell castings. Think of drawing out or pulling the sound out of the bell. Hold the mallets as snare drummers (matched grip), timpanists or keyboard percussionists hold their drum sticks or mallets. The mallet rests on the 'hook' of the index finger with the thumb closing around the handle resting on the side of the index finger. The third finger (pivot) presses the handle to the palm of the hand and the other two fingers close loosely around the handle. The loose grip allows the mallet head to leave the bell quickly and draw or pull the sound out of the bell. If you want a sharper staccato sound, use a little firmer grip. Not the white knuckle approach but like testing a clothes iron to see if it is hot. The wrist should be loose. The actual stroke could almost be like a wave “bye-bye” to the bell - a forward - circular - down - lift - push motion with the elbow, wrist and hand , palm down approximately 3- 8 inches (distance will vary with the size of the bell) above the casting lip at the point directly opposite the strike point (sympathetic – secondary strike point choice) for the clapper during regular ringing. As the mallet head bounces off the casting lip, the arm/hand should lift and push forward slightly. Imagine the sound as gently launching a butterfly from the lip of the casting just as you visualize painting the air with sound when you ring a handbell. When a pitch is repeated on the same bell in single notes or a roll, both mallets are used in alternation. The mallet heads should make at least a 45 degree angle at the

casting lip with the arms relaxed at the side of the body. With most ringers, the corner of the angle will line up with an imaginary line from the center of the body.

Some directors interpret the pluck symbol as the reason to use mallets. In some choirs, ringers use mallets all the time. The continuous mallet sound can be compared to the tremolo stop on the organ - a little goes a very long way! The mallet sound is a poor substitute for the plucked sound, especially in the tenor or bass bells. The sounds are very different. Using the pluck technique, the clapper strikes the casting on the side that rests on the foam starting the sound amplification immediately giving it more resonance (body). There is less resonance/volume with a mallet because the impact point is on the opposite side of the casting. It takes slightly longer to start the vibration of the entire casting. Rather than use mallets on a repetitive plucked bass/tenor bell line, use the **tap pluck** technique (TPL). This technique uses a curled hand with thumb extended and pointed parallel to the center of the body and wrist moving in a horizontal rocking motion so the side of the thumb hits the clapper head to move it. An alternate and acceptable technique for plucked treble bells is the thumb damp.(TD). It is also possible to nearly duplicate the plucked sound by using a softer mallet. Sometimes it may not be physically possible or practical to pick up a mallet for one note in a sequence. At that point, to pluck the bell is perfectly acceptable as long as the sound blends with everything else. The final determining factor in each case is the director.

There are definite assigned symbols for pluck (PI) and mallet (+ with dot below) for bells on the table and (+) for suspended bells. The composers and arrangers that are familiar with handbells will indicate with markings what sound they want when the composition is performed. Some publishers/editors just put dots over or under the notes to give the ringers or director a choice, guess, or pot luck. What sound did the composer/arranger have in mind?

ROLLS are executed by quickly alternating the mallets on a casting. They should be practiced until the alternation of the mallets is even and the sound does not vary in loudness between the mallet strokes. The crescendo of the roll is controlled by the speed of stick alternation, the distance between the beginning of the stroke and the bell casting as well as the intensity in the lower arm and firmness of grip on the mallet handle. An alternative technique for a roll that almost always will produce an even roll with a controlled dynamic is to place the palm of the hand 3 - 5 inches above the bell casting (depending on the size of the bell) and use one mallet in an down - up stroke between the casting of the bell and the palm of the hand. This will create an even roll and is easy to accomplish with the single mallet. It is possible to produce a nice crescendo with this technique and the bell will not have the tendency to roll as it may with alternating mallets on the casting when the strokes land off center of the strike point.

A suspended roll (without a tree stand) requires two ringers. Be sure that the ringer is holding the bell(s) low enough so the roll can be executed on the proper part of the casting with a downward motion. A roll whether suspended or on the table should **NEVER** be executed at the "waist" of the casting or using the opposite sides of the casting. You are inviting a stress fracture or the possibility of actually cracking or splitting the casting

SUSPENDED BELLS: Mallets are also used with bells suspended in single, multiple or bell tree combinations. When using a single bell, hold the bell (if you have time) between the thumb and index finger so that the bell is free to move. If two bells are used, a shelly position works well. There is difference of opinion as to whether the bells should be held upright and touched with the mallets on the front of the casting. This will eliminate the possibility of the shaft striking the lip of the casting (klink) but also makes it difficult to not touch the bell in the "waist". The arm motion is upward which is not as controllable or natural as a downward motion. The alternative would be to hold the bells in shelly but low so the palm and arm are at a 45 degree angle to the table. This will allow for a nice **lift - touch - lift** motion with the mallet hand creating a visual effect which may enhance the listener experience. The sound and shimmer can be more controlled dynamically from this position by the hardness of the mallet head. It is possible to suspend as many as four bells in one hand (preferably small bells) by using the shelly position for two, interlocking the other two and hanging them from the "pinky" finger. The configuration of the bells and time allowed in the music for set-up will determine the technique used. The challenge here is the strength of the "pinky" finger to support the weight of the bells. Be sure to set the pitches in the same order each time and write down the order.

Suspended bells to be played in thirds - set up the thirds and use two mallets held in a variation of the shelly position the way keyboard percussionists hold mallets when they are using two, three or four at once in one hand. In the case of suspending 6^s and 7's or 7's and 8's, mallets of different hardness may be needed in order to balance the volume and sound. It is possible to purchase double headed mallets with heads of different hardness on the ends of the shaft to accommodate the octave and size difference of the bells. It also eliminates a mallet or an extra set of mallets on the table for treble ringers when table space for everything used in a concert may be limited. It is also possible to hold two bells in hand with one casting up and one down. This is where a mallet with heads on both ends of the handle works well. There are bell tree mallets available with shorter handles. If a large single bell is suspended, be sure to touch the casting on the strike side or the back (sympathetic) side to prevent noise from the clapper assembly trying to move sideways in the yoke.

Bell tree mallets are not only for bell trees. Sometimes a cleaner, clearer, crisper sound in the 7's and 8's is possible with a shorter mallet handle. The mallet is lighter, thus easier to control the stroke. Remember, especially with suspended bells, the arm stroke should be smooth and flowing to create a pleasing visual effect to enhance the listeners enjoyment rather than a hand emerging from somewhere quickly, using the mallet and disappearing again. If you are using bell trees to lead the choir processional on the festival days of the church, use the hardest mallets you own but be sure the ringers have ear plugs or cotton for their ears. A nice slow or florid stroke will create an exceptional feeling of festivity.

BELL TREE SOLO? - be sure that you always set the bells in the pattern that will work the best for the passage if possible. When you find that arrangement, **write it down!** If you are using a bell tree stand, the length of the mallet shafts need to be adequate to enable you to comfortably reach the tree(s) furthest away from you with ease. Experiment with various mallets and shaft lengths to achieve a reasonable blend from the mallets that is pleasing for the listener and fits the characteristics of the selection you have chosen. Not all melodies and arrangements adapt well for a bell tree solo.

Suggested Music for mallets:

2-3 octave

Alotta Staccato Waldrop Lorenz 20/1155L
Joyful Joyful We Adore Thee Beethoven/Stephenson C Guild CGB 418
Percussive Praise McChesney Chorister Guild CGB 311

3 octave

Joy to the World Stephenson Genesis Press GP 2017

3-5 octave

Deck the Halls Stephenson CGB 700
Ding Dong Merrily on High arr Stephenson Agape 2526
For the Beauty of the Earth Stephenson C Guild CGB 851
Fum Fum Fum Stephenson CGB648
He's Got the Whole World in His Hands Stephenson CGB 739
Holy Manna Geschke Choristers Guild CGB793
Immortal Invisible God Only Wise Stephenson Lorenz 20/1696L
Joshua Fit the Battle of Jericho Stephenson Alfred 36507
Joy to the World Stephenson Genesis Press GP 2028
Joyful Joyful We Adore Thee Beethoven/Stephenson CGB 419
Just a Closer Walk Stephenson Choristers Guild CGB 753
Mallet Madness Mitchell AGEHR 35016
Rock-a-My Soul Stephenson C Guild CGB 612
We Three Kings Stephenson Alfred 31745

4-5 octave

Le Secret Gautier/Hunnicut National HB 163
Pick a Winner Gillis AGEHR 4030 (Can be used with extended octaves by doubling the top and bottom lines.

Bell Tree Solo Guide:

Bell Tree Keyboard Manual Tre-O 117

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