HAMMERS AND VOICING
10/14/2008

Tone, in the piano, is produced unlike that in its predecessor – the harpsichord. Here the string is lifted by a mechanism and suddenly released. The sudden release allows the string to vibrate, divide, to its full potential. In the piano the hammer lifts the string but the string is not released, the hammer continues to push against the string propelled by being flung at the string from its resting position. It keeps pushing against the string, choking the string vibration for a brief time until, subject to both the braking power of the string and gravity, it retracts and leaves the string to vibrate with the remainder of the energy left after the choking off of a good part of that energy by the hammer's contact.

Isaac Cadenza and Cadenza S hammers have been designed to store the energy of the hammer/string impact inside the hammer to be pushed back into the string at the moment of hammer retraction. In this way the choked off parts of the tone are returned to the string and the full tonal potential is obtained.

At the moment of hammer/string impact there are two forces acting upon the hammer: the pressure of the strings which can be displaced so far and no further and the constant force of gravity. Isaac hammers have a unique capacity to flex, this flexing is made up of two movements; the compression spread throughout the hammer concentrated in the shoulders due to the string impact which builds a resistance waiting to release and the release, the last event before the hammer leaves the strings. This release lifts the strings and returns to them the frequencies damped out by the hammer/string impact. What about voicing?

VOICING ISAAC HAMMERS.

Isaac hammers are prevoiced so there isn't much voicing required during instalation or later, there may, however, be a need for some voicing.

Isaac hammer is designed to work like a felt compression spring. Voicing Isaac hammer is, essentially, adjusting the spring to match the conditions (soundboard

responsiveness and string scale) unique to the piano you're working on.

We do not pre-voice Isaac hammers to be as bright as European or Asian hammers, this is because the brighter a hammer sounds when it is new – the shorter its life span and the less musical its tone.

To obtain the longest hammer life span and the richest, most musical tone a hammer needs to be brought up to the appropriate level of brightness for the individual piano. Where extra brightness is desired, use the hardener of your preference (keytops in acetone, plexiglass in acetone, laquer) and apply four drops to each shoulder (8 to 10 o-clock) and two drops to the strike point. If any hammers develop a pinging – shallow needle after verifying which of the two or three strings produces the pinging, sometimes it's only one string.

A procedure that is optional and one from which your will reap big rewards is to lay each new hammer on its flat side on a piece of softwood, cork sheet or Styrofoam, use a .050" diameter needle sticking out 5/8" from the pin vise and thrust it right through the hammer so it sticks out into the underlying sheet at shoulder level half-way from the molding to the outside of the hammer. Two thrusts 1/16" apart two thrusts left of the molding and two right of the molding. From hammer #60 and up one thrust on each side of the molding is enough and gradually move up from 9 o-clock to 11 o-clock at #88.

The hammers, without this procedure, will come to the same point in their tone producing life after being played for 25 hours or so. The compression under which the hammer was in the hammer press gradually relaxes. Doing this twenty-minute procedure simply relaxes the hammer faster.

Coming up.

Voicing Asian and European hammers.