When Tuning is Not Enough, and Rebuilding is the Question

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Considerations When Assessing a Piano for Extensive Work

- What are the desires of the owners?
- What is the suitability of the piano for the proposed work?
- Do you have the skills to accomplish the work?
- What are your external technical and material resources that you trust?
- What is the market value of the piano before work and after work?

Know Your Clients

Any business is about relationships. Everything else is just an abstraction: it is all about the people

- What is your relationship with the client?
- Do you have an understanding of clients expectations really?
- Are their expectations realistic? Are you being realistic in thinking you can meet theirs?
- What is your gut feeling about the client and the piano? Build these contingencies into the cost. Use your best business judgment about being careful and with whom you want to work.

Can the Piano Do the Job?

- Metallic action rails and one-piece rim construction are the two critical criteria for rebuilding a piano with modern piano parts.
- Your Piano May Not Be Living Up to Its Potential, it might be living beyond its means, or it might be just right.
- A re-built piano is only as good as what was not replaced
    - Showroom
    - Home practice\Teacher
    - Resale
    - Institutional
    - Practice room
    - Faculty
    - Stage

Concert Department Criteria

- The Concert Department experience has taught us that a concert piano that is used at the highest level will be at its peak within the first ten years of its life. This is a useful benchmark for this discussion.
- Within about fifteen years, the wood in the piano will have lost about 50% of its strength, and eventually the only thing remaining will be the rim.
- Have the giver of the piano place the remaining money in the bank. This would accrue interest enough to be able to afford a new piano every ten years.

- A thoroughbred horse is always a thoroughbred, but do not ask it to run in the Kentucky Derby when it is 15 years old with a replaced hip.
- Re-built pianos can be excellent but not as substitutes for new ones in the most demanding situations.
- If a university has an older piano and they want you to turn the instrument into a perfect piano for recording, it is not possible. Some of the quality and sparkle is lost. Many artists notice the difference in quality between new and old pianos.

Do you have the skills to do the work?

- Action repair
- Keyboard, key frame replacement
    - The mortis and tenon joints in a Steinway key bed are free to move; this is called a sliding joint. If the spruce key bed were glued together, it would make a drumming sound.
- Cabinet making, woodworking and finish
- Soundboard, bridge and wrest plank
    - For example, Steinways have no plate bushings because the pressure is against the flange in order to make the instrument as light and resonant as possible.
    - The case cornice is an architectural piece in the piano, so the stretcher dowels and plate bolts need to be there. The dowels anchor the plate to the stretcher beam.
    - The plate flange is very strong because it is attached to the stretcher beam.
- Facilities in which to accomplish this work
- Know your suppliers and their reputations.

External Market Sources

- You will need materials and parts
- You will sometimes need outside consultation
    - The remaining existing manufacturers have extensive knowledge and resources available
    - Include the manufacturers. They are very open to being a part of doing the best work that can be done, because all work done sets a precedent.
- Sometimes outside expertise and labor
- Sometimes additional employees
    - It is very difficult to maintain a small group of employees and to keep them employed.
- Always, maintain an open-ness to new ideas, opinions, talents and learning new things.

Steinway Action Part Changes

- Spring grub is narrower.
- Spring coil is the same so there is no noise there.
- Spring may require more acute bend at the end of the tender end.
    - The wire and the hole in the fly must match.

    - Sometimes the spring needs to be cut slightly shorter
- Spring grub is lubricated with Teflon and graphite, rather than graphite and tallow which used to become rather stiff.
- The fly window in the whippen is narrower front to back.
    - If there is too much after-touch, lower the hammer line a mm, or decrease key dip.
    - Set samples and adjust the dip and blow.
- Flange thickness is the same as the Hamburg dimension. The NY flange used to be a little thicker on the top.
- Grub shape has been changed to allow the shanks to rest on the backs of the flange rather than on the drop screws.
- Shanks and flanges have been changed because the community has asked for a bigger sound. The knuckle core has been moved to 17mm. this avoids loading the keys with lead.
    - Pre-84 knuckle is .046" closer to the flange. Used from pre 1900-1984
    - NYI parts and Hamburg parts are the same specs (5/8") knuckle core front to center pin.
    - NYI
- The taper of the hammer is just from the bottom of the felt to the bottom of the tail to produce more mass in the hammer.
- Steinway Repetition styles
    - The fly has been moved back to match the jack to the knuckle.
    - Pre-84 jack center is farther out by 1 mm
    - Vertical spacing is consistent
- Touch weight scenarios with current hammer mass
    - When regulating, there needs to be enough movement in the key sl the key contacts the underlever at $1/8^{th}$. This means that the key dip has to be a little shallower.
    - Examine the chart of touch weight scenarios with current hammer mass before ordering parts for a re-build.
- Back-checks then and now
    - When the hammer shank is horizontal, there should be 1/16" from the top of the back-check, at let-off and before wire bending.
    - The back-check at 68 degrees
    - The nap of the back-check faces down, so it lets the tail slide in but not enable it to slide out again. Leather stretches from spine to gut.
    - Exane is an excellent material to use, is dustless and durable.
- Damper underlever assemblies
    - Spacing on parts has been consistent over the years.
    - Spacing side to side and front to back are the primary adjustments
    - Some flanges were glued rather than screwed to reduce weight.
    - From the pivot pin to the lever is 3-1/2"
    - To adjust the position of the damper assembly, make new pivot blocks.
    - The spring on the back of the damper has been eliminated to reduce resistance. For a consistent down-weight all the way through the stroke of the key, leads were added to replace the springs.

- Restoration Center Belly Department
    - Hickory stick go-bars
- Lead
    - Lead weights can be replaced with other materials
    - We should change out language from “lead weights” to “weights”

Recommendations

- If you change the shank but don’t change the wippen, the fly will be back farther and will make it difficult to turn the let-off button up enough. In this case, use the smaller let-off buttons. Change the wippens as well.
- Use New York Improved parts to improve the touch weight of an action to bring it to today’s performance standard. This will significantly minimize leading of keys.
- This is particularly important when using modern Steinway hammers (heavier).
- If the let-off buttons “top out,” then install let-off buttons (part #5070) to allow more adjustment.

Is it worth it to your client?

- What is the value of the piano as is/?
- What will it cost to do the work?
- What will the value of the piano be when you are through?
- Value can be the enjoyment of the player, sentimental, heirloom, design, monetary
- Somehow it must be worth the cost to the client
- Your work may well last longer than you. This can be a legacy or liability; this is also up to you.

Costs

- Get 5% of the cant – the useable trunk of the tree. Of this, only ½ of 1% is used.
- Steinway works with reforestation of the wood that they culled.
- Exotic woods are rare and very expensive.