What Matters, What Doesn't:
Prioritizing Work in a Changing Market

Mario Igrec, M.M.

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In Tune Press, LLC
7038 Edgewater Dr
Mandeville, LA 70471
+1 985 231-1248

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The Market Today

Market Trends

- Fewer kids learn to play the piano
- Schools increasingly use cheap keyboards
- Piano as a source of home entertainment is vanishing
- Culture of casual playing is under assault
- Vertical piano is replaced with keyboard

Market Trends

- What's left?
  - Serious piano students/parents
  - Professional pianist
  - Enthusiast (may have a reproducing piano)
  - Collector
  - Institutional users
    - Colleges
    - Churches
    - Clubs, concert halls

Market Trends

- What can you do about this market reality?

Move to China

38 million studying piano
300,000+ pianos sold every year
Dealers import skilled technicians

or

Focus on professional market

Market Trends

- How do you transition to the professional market?
  - Work on your regulation and voicing skills
  - Focus on tuning stability
  - Talk to concert and institutional technicians
  - Improve your piano playing skills
  - Talk to pianists, attend concerts
  - Compare highest quality pianos: tone, feel, regulation, playability
  - Learn touch analysis
    - Use Practical Touch (http://pianosinsideout.com/Bonus)
  - Intern or work at a college

Market Trends

- Realize your true value.
  Our focus today is technical, but consider:
- Are you there to:
  - Bring strings to correct pitches?
  - Make the mechanism work flawlessly?
  - Achieve technical perfection?
  - Make the piano sound good to you?
- or:
  - Remove obstacles to complete musical immersion?
  - Improve customer's experience with the piano?
  - Enhance emotional connection with the piano?
  - Stoke passion for music?

Market Trends

- Why upsell services?
  - Adds value to owner/user
  - Restores "magic," improves response and tonal palette
  - Improves musical experience
  - Encourages continued use (and servicing)
- Not upselling necessary service is a disservice to the customer

Do what needs to be done!

What Matters:

Through the Eyes
(and Fingers)
of the Pianist

Pianist's Tests (in 30 seconds or less)

- **Pass fingers** over white keys, sharps
  - Circular motion reveals: Keytop texture, key level, slanting, height of sharps, loose bushings, pulley keys
- **Bounce a few keys**, playing softly
  - Reveals: Touchweight, friction, looseness, voicing in *pp*, regulation, reliability, backaction weight, damper stop rail regulation
- Play **scales, arpeggios** without and with pedal
  - Reveals: Action regulation evenness, voicing, sense of balance (touchweight, inertia, voicing), pedal regulation
- Play ***legato cantabile*** **melody** [Mozart Facile Sonata, Chopin Bb min Scherzo 2nd theme]
  - Reveals: Extent of killer octave problem, boominess of tenor and bass, action heavy in left hand
- Play **soft openings** (high anxiety)
  [Beethoven F maj sonata , Eb major Op. 31 No. 3, Eb maj op 10 No. 2, Chopin Bb min Scherzo, Liszt B min sonata]
  - Reveals: Let off, drop, aftertouch, backchecking, evenness of touchweight and friction
- Play in a key with a lot of **sharps** or flats [Bach G# min prelude]
  - Reveals: Space between sharps, length of key's front segment (leverage reduction)
- Play **repetitions** [Ravel Tombeau de Couperin, Toccata; Prokofiev Sonata No. 3; Beethoven Eb maj Op. 7 left hand repeat; Liszt Dante sonata first theme]
  - Reveals: Let off, drop, spring tension, backchecking, jack and rep level adjustment
- Play ***staccato forte***
  - Reveals: Damper problems (bleedthrough, noises), uneven voicing, V bar zings, duplex ringing
- Play **octaves, chords, glissandos**
  [Tchaikovsky Concert no 1, 1st theme, Stravinsky Petrouchka opening, Beethoven Waldstein Sonata Op. 53 4th mvmt]
  - Reveals: key pin/bushing friction, key dip and height of sharps, touchweight, inertia
- Attention turns away from the piano, the rest is practicing

Pianist's Anxieties

- Note won't come out in *ppp*
  - Always risky, difficult to control in chords
- Heavy action
- Sluggish repetition
- Dampers don't work
- Pedal
  - Heavy, catches too high or too low
  - Squeaks
- Muffled top (fat left hand syndrome)
- Loose, noisy bench
- Unisons out of tune, unstable
- Sounds like glass
- Loose and noisy action
- Uneven passage work
- Soft pedal
  - Squeaky, clanky
  - Too much voicing contrast
  - Fuzzy sound

Address these and you have a customer for life.

Addressing Pianist's Anxieties

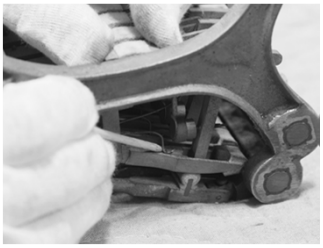
- Note won't come out
  - Let off *and drop* must be close to strings
    - String shadows
    - Magnetic strip, adjust by touch
    - Playing off the jack
    - Check if too high in bass (play loudly, stop key at let off—can you feel vibrations?)
  - Friction must be even, 9-15 g
    +/- 3 g (F = (DW – UW) / 2)
    - Too low feels unnatural (don't lube knuckle *and* rep lever and jack)
  - Touchweight must be consistent, 35-38 g BW
    +/- 3 g (46-52 g DW, 22-28 g UW)

Addressing Pianist's Anxieties

- Heavy action
  - Muffled sound (soft hammers, short sustain?)
  - Mushy, spongy
    - Friction? (key pins, key bushings, knuckle, center pins, backaction, damper wires)
    - Tight balance holes? (not conical enough into the mortise, debris)
    - Damper stop rail low?
  - Hard to keep keys depressed, keys push fingers up
    - High Upweight?
    - Balance weight > 41 g?
  - Feels like a truck
    - Inertia (D. Stanwood: for BW of 35-38 g, BW + FW should be around 65 g)
    - Key dip > 10 mm, sharps > 12.7″ high?
    - Heavy, high-friction backaction?

Addressing Pianist's Anxieties

- Sluggish repetition
  - Backchecking not more than 13 mm from strings, but test hammer tails rubbing against backchecks (raise backchecks if needed)
  - Spring slot, spring end: clean and lubricate

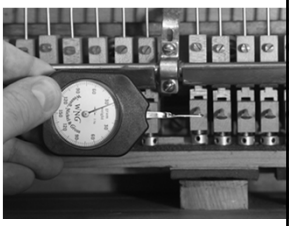


Addressing Pianist's Anxieties

- Sluggish repetition
  - Adjust springs (rapid rise, no bump)
  - Rep lever center pin friction too low?
  - Raise hammer rest felt to just under shanks
  - Touch:
    - DW/UW too low (counterintuitive)?
    - Wippen assist springs, TouchRail too strong?
    - Inertia too high? Reduce hammer strike weight, remove key leads?

Addressing Pianist's Anxieties

- Dampers don't work, zing, or bleed through
  - Oxidized damper wires, tight guide rail bushings?
  - Wedge felts:
    - Bent, torn?
    - Hard?
    - Contaminated? (spilled drinks, rust)
  - Strings out of level
  - Underlevers not heavy enough?
  - Duplex hum?



Addressing Pianist's Anxieties

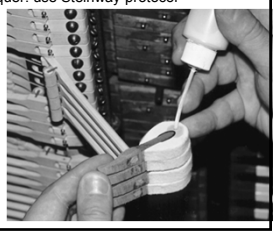
- Pedal heavy, catches too high or too low
  - Friction in pedal, trapwork, pitman, tray spring?
  - Pedals too low?
    - High-pile carpet: use caster cups
    - Reduce thickness of pedal rest felt
  - Springs in trapwork, underlever tray too strong?

Addressing Pianist's Anxieties

- Pedal squeaks
  - Lubricate/renew:
    - Pedal cup, leather, boot
    - Pedal pin and bushings
    - Pedal rod guide rail bushings
    - Trapwork leathers, felts
    - Pitman linkage
    - Underlever tray spring interface

Addressing Pianist's Anxieties

- Muffled top (fat left hand syndrome)
  - Sand hammers if enough felt and won't overcenter or:
  - Dope hammers with lacquer, collodion, or acrylic
    - Soft hammer and lacquer: use Steinway protocol
    - Denser hammer: dope from side, leave shoulders to breathe



Addressing Pianist's Anxieties

- Muffled top (fat left hand syndrome)
  - Melody octave has short decay
    - Robert Grijalva's Treble Tone Resonator

Photo by Robert Grijalva

- Darrell Fandrich's Riblets

Addressing Pianist's Anxieties

- Loose, noisy bench
  - Most overlooked service item
  - Unstable bench: the most distracting factor in piano performance
  - Routinely inspect and tighten legs
  - Tighten scissor mechanism
  - Promote petit artist or artist bench for students (they really need it)
  - Pneumatic/hydraulic?

Addressing Pianist's Anxieties

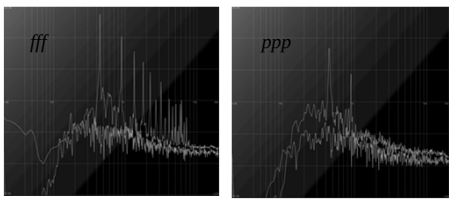
- Unisons out of tune, unstable: impediment to expression
  - High friction on string bearings? Lubricate them with Prolube:

  - Humidity control?
  - Temperature changes?
  - Tuning technique?
  - Loose tuning pins? Knock them in or CA the block.

Addressing Pianist's Anxieties

- Sounds like glass, not enough tonal gradient

A4:



  - Hammers are hard, overcompressed?
  - Grooved, filed hammers
  - Lacquer speaking?

Addressing Pianist's Anxieties

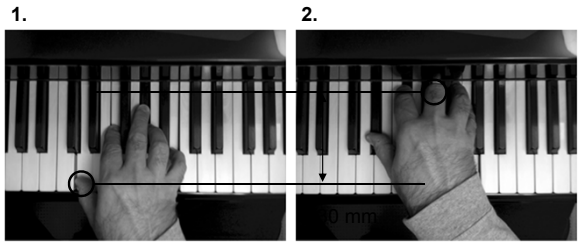
- Sounds like glass, not enough tonal gradient
  - Pianist backs off, further flattening dynamic range
  - Jeopardizes hearing
  - Reshape the hammers?
  - Ball-peen-hammer the crowns?
  - Needle the hammers?
  - Replace the hammers?

Addressing Pianist's Anxieties

- Loose and noisy action
  - Key frame bedding, end pins, end block plates
  - Loose rails and parts
  - Loose center pins, worn bushings
  - Loose hammer heads
  - Pulley keys
  - Loose regulating buttons (drop, let off)
  - Loose underlevers, damper heads

Addressing Pianist's Anxieties

- Uneven passage work, uneven feel
  - Regulation consistent (letoff, drop, spring, aftertouch)?
  - Keys short?

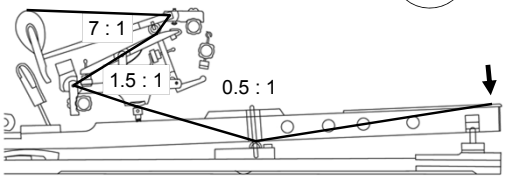


Addressing Pianist's Anxieties

- Uneven passage work, uneven feel
  - Regulation consistent (letoff, drop, spring, aftertouch)?
  - Keys short?

Instead of:

7 x 1.5 x 0.5 = 5.25 : 1

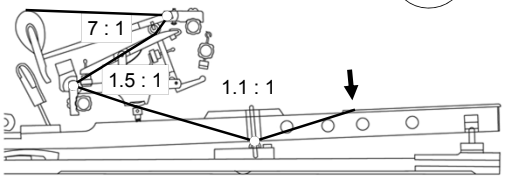


Addressing Pianist's Anxieties

- Uneven passage work, uneven feel
  - Regulation consistent (letoff, drop, spring, aftertouch)?
  - Keys short?

… the leverage ratio in ex. 2 is:

7 x 1.5 x 1.1 = 11.6 : 1



Addressing Pianist's Anxieties

- Uneven passage work, uneven feel
  - Regulation consistent (letoff, drop, spring, aftertouch)?
  - Keys short?

    … and that changes:

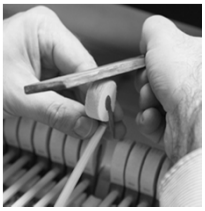
  - Balance weight: +**41 g** (**117%**: 35 to 76 g)
  - Friction +**10 g** (**83%**: 12 to 22 g)
  - Inertial touch resistance: +**57.1** (**109%**: 52.3 to 109.4)
  - Front Weight: +**27 g** (**100%**: 27 to 54 g)
  - Leverage: +**5.9** (**107%**: 5.5 to 11.4)

Addressing Pianist's Anxieties

- Uneven passage work, uneven feel
  - Regulation consistent (letoff, drop, spring, aftertouch)?
  - Keys short?
  - Voicing even?
  - Sharps too high (> 1/2" [12.7 mm])?
  - Friction consistent (DW – UW) / 2? (< 15 g, +/- 2 g)
  - Touch:
    - Key inertia too low (few key leads, wippen assist springs)?
    - Action leverage ratio high (6.0+)?
    - Consistent:
      - Touchweight (BW 35-38 g +/- 3 g)
      - Strike weight (+/- 0.5 g)
      - Action leverage ratio (+/- 0.3:1)
        - Do shank center pins form a line (are the flanges jagged)?
        - Do knuckles form a line?
        - Do capstans form a line?

Addressing Pianist's Anxieties

- Soft pedal squeaky, clanky, too much voicing contrast, fuzzy sound
  - Vacuum, sand key bed and key frame, vacuum, lube
  - Clean, polish, lubricate frame-return spring
  - Take up slack in soft pedal, lubricate pedal and linkage
  - Limit travel: Strings between the grooves
  - Level strings, mate hammers to strings
  - Round left edges of hammer crowns
  - Voice for soft pedal



Pianist's Top 10

10. Nice temperament, nice stretch (not too much in treble)
9. Quiet dampers
8. Good bench
7. Smooth, quiet soft pedal (small amount of shift)
6. Reliable half-pedal
5. Even voicing, balanced between sections
4. Even touchweight (balance weight, strike weight, front weight)
3. Clean, stable unisons
2. Low, consistent friction ties with
1. Nice regulation

What Doesn't Matter

What Doesn't Matter

- **Preoccupation with detail** before addressing preconditions, e.g.:
  - Perfecting repetition spring tension, but:
    - Leaving gunk on spring and rep lever slot
    - Leaving backchecking low and inconsistent
  - Voicing without:
    - Tuning
    - Leveling strings
    - Mating hammer heads
  - Perfecting tuning, but:
    - Not addressing humidity, temperature swings
    - Not tightening plate screws and bolts

What Doesn't Matter

- Focusing on one aspect, **ignoring other aspects**, e.g.:
  - Even DW, uneven UW
  - Even UW, uneven DW
  - Even DW and UW, but ignoring large variations in friction, hammer weight, leverage, front weight
  - Perfecting touchweight and inertia, ignoring voicing and tuning
  - Reducing leverage by repositioning capstan and wippen, leaving knuckle at 15.5 mm

What Doesn't Matter

- **Senseless precision**
  - Adjusting **wippen radius weight** (effect on touchweight is 2:1, wippens vary by 2 g, effect on touchweight 1 g; but adjusting wippen assist springs for even radius weight is a must)
  - Perfecting **key front weight** (FW)
    - Keep an eye on FW, but don't obsess
    - Measure FW with spring or tension gauge on key frame if that saves time
  - Insisting on **precise lead positioning** within key (Darrell Fandrich: strike weight is more important; Rick Voit demonstrates that moving lead weights has little overall inertial effect)
  - Perfecting **strike weight** (for inertial evenness) but leaving hammers unvoiced (voicing affects perception of touch)
  - Perfecting **blow distance** and/or **key dip** (focus on aftertouch instead)

What Doesn't Matter

- **Wasting time**
  = higher charge = discouraged customer
  or:
  = less pay = you are discouraged
  - Is there a more efficient method, tool, solution?
  - Should you perfect the regulation after a rebuilding or improve it incrementally down the road?
  - Outsource or learn and do in house?
  - *L'art pour l'art:*
    - Workmanship for the sake of workmanship
    - Beauty for its own sake
    - Steve Jobs effect—is internal beauty superfluous or subliminally reflected in overall quality?
  - Dangers of:
    Upholding "highest standards of craftsmanship"
    vs.
    Slipping into "good enough" attitude

What Else Matters

What Matters to the Customer?

- Professional competence
  … but also acting professionally:
  - Convenience (reminder card, e-mail, call)
  - Being punctual and keeping appointments
  - Clean vehicle, groomed look, professional dress
  - Removing shoes when entering the house
  - Positive attitude
  - Respecting customer's perspective, intelligence
  - Not being defensive, but looking for solutions
  - No drama and knocking down previous technician

What Matters to the Customer?

- Ask yourself:
  - Have you provided **quality service**?
  - Have you created a sense of **stewardship** of customer's property and well being?
    - **Protected** the floor, bench, furniture
    - **Warned** before dispensing smelly chemicals, e.g. CA glue?
    - Asked the customer in advance to **clear objects** from the piano or, if (s)he didn't do it:
    - Carefully removed and placed back the objects on the piano **in same order** ?
    - **Vacuumed** in and around the piano?
    - Used **gloves**?
  - Have you advised the customer with **his/her needs** in mind?
  - Was the experience **pleasant** for the customer?
  - Was the service **convenient** and on customer's terms (scheduling reminder via medium they prefer, call night before)?
  - **Would you hire yourself again?**

How Do You Set Priorities?

- First set yourself up for success. Consider:
  - Current condition of the piano
  - Environment
  - Purpose/use of the piano
  - Budget
  - Customer's needs, expressed and implicit
  - Evaluate touch performance

Let's look at each of those…

Current Condition of the Piano

- Tighten/fix everything that's broken:
  - Lid hinges
  - Wobbly legs
  - Hanging lyre, loose pedals
  - Keys, shanks, action parts
  - Center pins
  - Missing, eaten bushings
  - Missing, eaten felts, leathers
  - Missing strings
  - Reglue key tops, clicking hammers

Current Condition of the Piano

- Clean and lubricate:
  - Key bed/frame, return spring
  - Key bushings, key pins, balance holes
  - Verdigris, sluggish center pins, repetition springs
  - Knuckles, let off buttons, wippen heel felts
  - Pedals, trapwork, pitman dowel
  - Damper wires

Current Condition of the Piano

- Tune:
  - Tighten plate screws and perimeter bolts every few years
  - If in a hurry, focus on octaves, unisons
  - Raise pitch to A440: pitch raise improves sound envelope, voicing consistency, and volume, not just pitch

Environment

- Are windows double pane? Drafty? Floor insulated?
- A/C vents, radiators
- Piano in bay window?
- Humidity control?
  - Piano Life Saver system (Dampp Chaser)
  - Music Sorb
  - Humidifier/dehumidifier
  - Central (de)humidification

Consider Purpose/Use of the Piano

- Home
- Practice room
- Studio
- Band/choral rehearsal room
- Auditorium
- Sanctuary
- Recital piano
- Concerto piano

Budget

- Must be adequate to address fundamental problems
- Anticipate and budget extra work
- Are you ready financially if things go wrong? Insurance?

Customer's Needs

- Communication: What the customer says is not always what they really want or need:
  - "Tone is mushy" can mean different things
  - Beware of hearing aids
  - "The action is too heavy" or "slow" can mean:
    - Excessive touchweight and inertia
      but also:
    - High friction
    - Excessive key dip, high sharps
    - Soft/overneedled hammers
    - Early damper lift timing
    - Strong repetition springs, excessive drop, backchecking distance
    - Misadjusted pedal

Evaluate Touch

- Use Practical Touch™ Analysis to evaluate action performance noninvasively, in 4 easy steps.
- Do your findings match what the customer is saying?
- To improve touch, first take care of:
  - Friction
  - Regulation
  - Tuning
  - Voicing and room acoustics
- If you don't have experience, subcontract touch optimization

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"Success does not consist in never making mistakes but in never making the same one a second time."

—George Bernard Shaw

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