

Surviving and Thriving as a CAUT

Presented by:
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What is a CAUT?

- Piano technician
 - Tuning, service, benches, humidity, rebuilding
- Bean counter
 - Inventory, expenses, budget, parts, supplies
- Administrator
 - Scheduling, ordering, bills, selling, moving pianos
- Strategist, educator, value provider...
 - Educating, teaching, training, community outreach, adding value

What is a CAUT?

Solution provider

What is a CAUT?

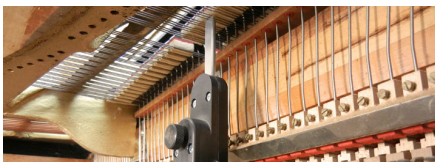
Solution provider

Enabling:

- People
(Students, faculty, guest artists)
- Ideas
- Creativity

Why become a CAUT?

- Pianos are fascinating to you
- Pianos are like your children
- Lab for learning and experimentation



Leveling string with <https://grandwork.tools/products/underlevel>

Why become a CAUT?

- Steady job
- Underpaid, but good benefits
 - Health insurance (on your own: \$25-35k for family plan)
 - Pension
 - Half of social security tax (12.4%), half of medicare tax (2.9%)

Why become a CAUT?

- Springboard into community
- Enables building a thriving private practice



Image: <https://www.businessgatewayfile.com/news/springboard-programme-events-business>

How to become a CAUT?

- Strong tuning, regulation, repair skills
- PTG RPT status
- Manufacturers' trainings and certifications
- Reliable, dependable, disciplined
- Willing *and able* to work early and/or late, irregular schedule
- Apply for jobs early, network (attend PTG conferences)
- Approach head techs at large schools?
- Internship?

They called you!

- Show interest in the school
- Prepare for interview by learning:
 - Who is in charge
 - Key faculty members
 - Notable alums
 - School's strengths, mission
 - Sources of funding (endowment, special purpose funds)
 - Events they sponsor (competitions, summer programs, conferences, meetings, galas)
 - Programs they offer (Evening school? Precollege? Community? Camps? Summer school)
 - Special events (conferences, meetings)



If offered the job, negotiate:

- **Expectations**
- **Commitments**
- **Additional pay** for extra venues, other departments, commercial events?
- **Private work** off and on campus allowed? (if interested)
- **Use of shop** for private work?

Expectations:

- Full time/part time
- **Salary**
- Work hours
- Add'l hours (overtime rules)
- Evenings (recitals), weekends
- Benefits (health, dental, vision, retirement, life insurance, transit)
- Vacation and time restrictions
- Pay raises
- Territory (Other buildings? Off campus?)
- Piano moving?
- Disposal: selling, auctioning, donating
- **Rebuilding** (Internal v. external: action, strings, belly)
- Tuning harpsichords
- Celestas? Glockenspiels? Other instruments?
- Year-end piano sales?
- Expense reimbursement
- Reporting (what, who to, how often?)
- **Days off for training**
- **Parking** (including service drives)
- **Credit card use**

Commitments:

- Shop space(s)
- Storage closets
- Equipment
- Tools?
- Staffing
 - Hours
- **Budget**
 - Parts
 - Rebuilding
 - Personnel: student workers, interns
 - Contractors
 - Piano purchasing
 - Buying vs leasing
 - Training
 - Travel

When you start a job

- Be guided by:
 - Previous tech
 - Administrators
 - Faculty
 - Facilities people
 - Band instrument repair tech? Scene shop? Curator of string instruments?

How things are done likely has multiple reasons

When to say no?

- Doesn't support mission
- Cost (time, resources, distraction) greater than benefit
- Setting you up for failure
 - Not enough time
 - No budget
 - Frustration, exhaustion, burnout
- Exceeding original job expectations

When to say no?

But:

- Saying yes invites opportunities
- Everybody has their pressures
- Consider their perspective
- Are you helping or are they taking advantage of you?

PIANO TECHNICIAN

Reactive vs. proactive service

- Reactive: by request
- Proactive: daily checks, periodic tunings, yearly service
- Choice depends on:
 - Pianos per tech (40-50 proactive; 60+ reactive)
 - Resources:
 - Techs, interns, assistants, students, admin help
 - Contractors
 - Outside services
- Typical: proactive in halls, piano studios; reactive elsewhere

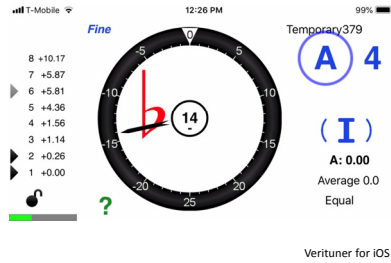
Tuning

- Full vs. partial tuning vs. touchup
- Floating pitch (A440-442?)
- Pitch corrections, overshoot
- When A/C turns on...

Tuning

• Benefits of ETD

- Consistency
- Noisy situations
- False beats
- Pitch correction
- Faster?
 - No temperament strip
- Better stability?
 - Tune left to right
 - No temperament strip



Broken strings

• Followup system (spreadsheet provided)

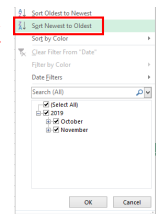
Return in 1-3-7-21 days

New string retuning schedule

Room	Piano	String	Date	Date 2	Date 3	Date 7	Date 21
113	Hamburg 8	g5 m f	10/2	10/5	10/15	11/10	
223		b6-c7	10/8	10/10	10/14	10/20	11/14
234		ff	10/28	11/2	11/6	11/14	
118	Left		11/10	11/12	11/15		
426		aw1 m	10/10	10/13	10/20	11/7	
88	NV D	g6 f	11/14	11/15			

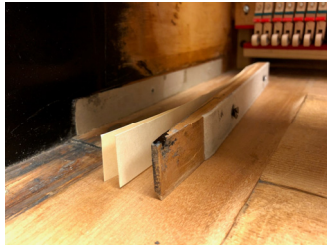
Sort by date descending

Room	Piano	String	Date	Date 2	Date 3	Date 7	Date 21
88	NV D	g6 f	11/14	11/15			
118	Left		11/10	11/12	11/15		
234		ff	10/28	11/2	11/6	11/14	
426		aw1 m	10/10	10/13	10/20	11/7	
223		b6-c7	10/8	10/10	10/14	10/20	11/14
113	Hamburg 8	g5 m f	10/2	10/5	10/15	11/10	



Recurring service needs

- Slack in pedals
- Damper upstop rail too high
- Shim key frame rest block
- Lube key bed, key frame
 - McLube 444 or bar soap
 - First scrape off waxy gunk



Benches

- Classic artist bench (Jansen)
 - 90 turns of knob x 2 just to tune?
- Modern choices
 - Hidrau Model (pneumatic): Pianoworks
 - Andexinger (hydraulic)
 - Discacciati (hydraulic): Bondy piano
- Tilted ("ergonomic") top: no!
- ~~Cloth, suede, faux leather~~, leather seat
- Replacement seat tops



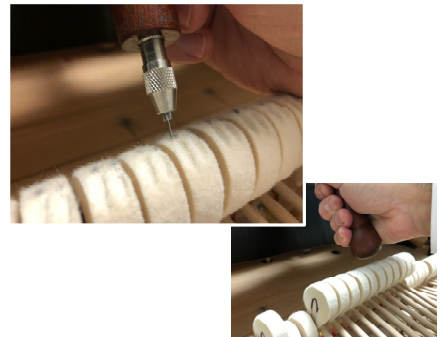
Benches

- Vinyl tops



Voicing

- Opportunistic
- Limit time
- To reshape or not?
- Voicing grooved hammers
- Always reset felt
- Overshoot



Voicing

- Deep needling
 - Increases dynamic gradient
 - Improves sustain
 - Permanent, dependable



Cleaning

- A dirty piano can't be in tune
- A dirty piano feels uneven

People play with their eyes!



Case cleaning options

- Fantastik mix
 - 40% Fantastik
 - 40% water
 - 20% alcohol
- Cory polish for high gloss, clean satin finishes
- Cory pre-polish/finish cleaner for gunked up satin finishes



Yearly service

- (Form provided)
- 8-12 hours per piano
 - Day 1:
 - Cleaning
 - Lubrication
 - Reshaping hammers
 - VS Profelting
 - Day 2:
 - Keys
 - Regulation
 - Tuning
 - Voicing

Yearly Piano Service

Technician: _____ Date: _____

Piano: _____ Serial no.: _____

Day 1/ morning	
1. Conditioning plates, repeat 1x • They are lubricating plates? • Do they have enough oil? • Check and adjust • Clean up old oil • Check and adjust • Check and adjust	8. Check action repeat and adjust • Check action repeat • Check action repeat • Check action repeat
2. Check hammer flange • Check hammer flange • Check hammer flange • Check hammer flange	9. Check hammer flange • Check hammer flange • Check hammer flange • Check hammer flange
3. Strings • Check strings • Check strings • Check strings	10. Check strings • Check strings • Check strings • Check strings
4. Check hammer flange • Check hammer flange • Check hammer flange • Check hammer flange	11. Check hammer flange • Check hammer flange • Check hammer flange • Check hammer flange
5. Check hammer flange • Check hammer flange • Check hammer flange • Check hammer flange	12. Check hammer flange • Check hammer flange • Check hammer flange • Check hammer flange
6. Check hammer flange • Check hammer flange • Check hammer flange • Check hammer flange	13. Check hammer flange • Check hammer flange • Check hammer flange • Check hammer flange
7. Check hammer flange • Check hammer flange • Check hammer flange • Check hammer flange	14. Check hammer flange • Check hammer flange • Check hammer flange • Check hammer flange

Yearly service

- Cleaning
 - Plate, around tuning pins
 - Vacuum action cavity
 - Soundboard (Spurlock set)
 - Case



Yearly service

- Preserve and protect:
 - VS Profelt saves bushings
 - Action cleaning
 - Lubrication
 - Regulation
 - Voicing



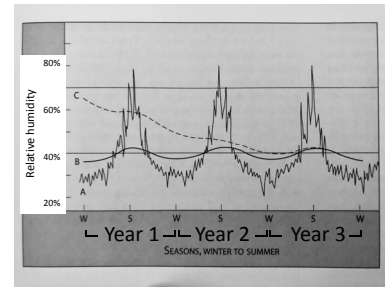
Grit, oxidation = Friction = Noises = Wear = Need to replace

Climate control

High humidity:
more damaging
than dryness?

Humidity

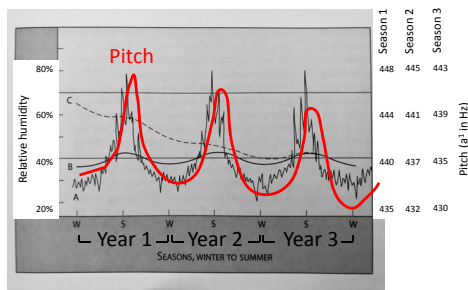
- Seasonal changes



Bruce Hoadley, *Understanding Wood*, p. 135

Humidity

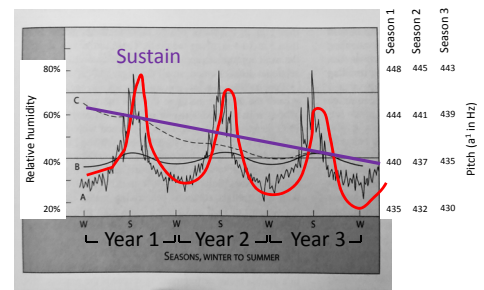
- Seasonal changes
- Pitch follows humidity



Bruce Hoadley, *Understanding Wood*, p. 135

Humidity

- Seasonal changes
- Pitch follows humidity
- Sustain gets shorter with time
- The tone dies!

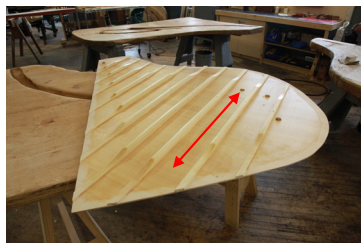


Bruce Hoadley, *Understanding Wood*, p. 135

Humidity

- Expansion, contraction

(15 mm or $> 5/8$ " across the grain!)



Humidity

- Expansion, contraction
- But wood is constrained:
 - Ribs



Humidity

- Expansion, contraction
- But wood is constrained:
 - Ribs
 - Glued to rim



Humidity

- Expansion, contraction
- But wood is constrained:
 - Ribs
 - Glued to rim
- Bruce Hoadley: "you can't do that with wood"



Humidity

- Compression set



Bruce Hoadley, *Understanding Wood*, p. 129

Humidity

- Soundboard has nowhere to go



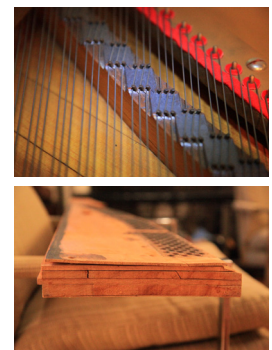
Humidity

- Soundboard has nowhere to go ... but up and down



Humidity

- Wood eventually cracks



Humidity

- Soundboard crown:
 - Breathes
 - Affects pitch, tuning



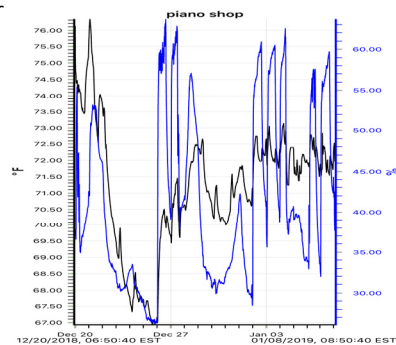
Measuring humidity

- Train faculty and students on effects of humidity changes
- Put hygrometers in studios
 - Raises awareness
 - Encourage users to report changes
- Carry a portable hygrometer with you



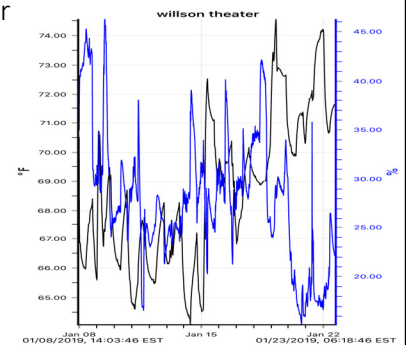
HOBO data logger

- Blue Tooth!



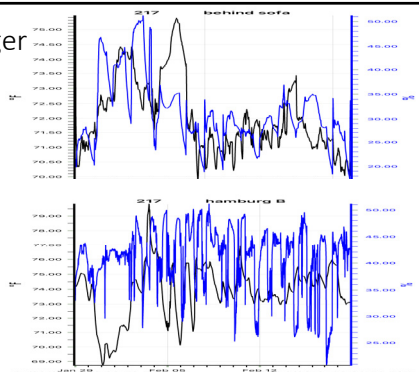
HOBO data logger

- Monitor daily changes



HOBO data logger

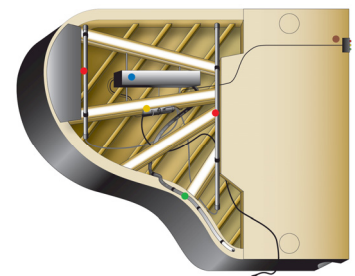
- Buy two!
- Place one in the room
- Place another under soundboard, compare



Humidity solutions

Damp Chaser

- Dehumidifier only (HD):
 - Good for east coast, southeast
 - No maintenance
 - 2, 3 or 4 heater bars
- Full system (H5):
 - High maintenance
 - Piano watering crew
 - Pad replacements
 - Yearly cleaning
- Undercover
 - Effective
 - "Piano diaper"



Humidity solutions

Room humidifier

- Automatic: reliably turns on and off within 3% RH
- Moderately effective
- Can you choke off HVAC air volume?
- Needs refilling daily



Humidity solutions

- <https://www.amazon.com/HD1409-Whole-House-Console-Style-Evaporative-Humidifier/dp/B00KVN8CLA/>

- Additive



Humidity solutions

Signs

- Laminated signs on doors



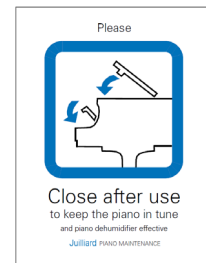
Humidity solutions

Signs

- Laminated signs on music desks
- Stickers on Dampp Chaser cord and extension cords



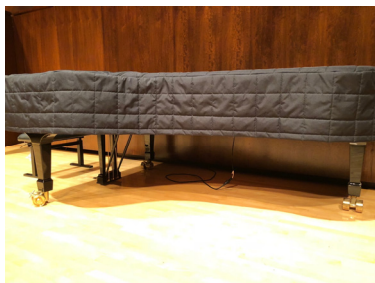
- Stickers on power outlets



Humidity solutions

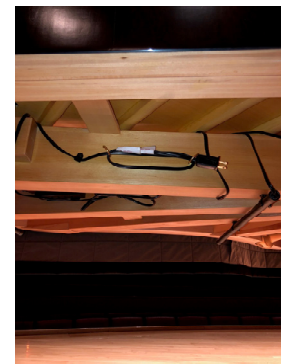
Piano covers

- Keep pianos closed and covered when not in use
- Monitor daily
- Close pianos yourself



In performance spaces

- Provide a way to make the cord invisible
- Cord should only hang to the ground so it can't be run over by casters
- Use extension cords!
- Provide enough extension cord to move the piano without unplugging



Expenses (spreadsheet provided)

DATE	VERSION	CATEGORY	COST	Orig Cost	INVOICE #	Notes	Summary by vendor	Summary by category
6/27/2018	MISC	supplies	265.43	265.43	25667000	cheese cloth, etc	Dean	\$ 1,500.00 credit
7/7/2018	Plasma Fork Supply	supplies	1,623.00	1,623.00	277000	Centable	\$ -	Danp-Chaser systems \$ 9,447.57
7/20/2018	Plametek	supplies	60.52	60.52	111000	V5 Pro Fat	Richard	\$ - meat
7/20/2018	MISC	supplies	359.00	359.00	3025000	vine regulator	Quincy Mung	\$ -
7/20/2018	Beas	tuning assistance	300.00	600.00	8V-59	Garinger	\$ 1,564.70	plasmotom \$ 3,375.00
7/16/2018	Schall	credit	8.00	200.00	1020000-000	for returned bag	IMP	\$ 60.00
7/13/2018	Plametek	PlasmaFork	60.00	60.00	111700	1/2 parterl phare	James Dept	\$ -
7/22/2018	Beas	tuning assistance	760.00	100.00	8V-60	Home Depot	\$ 2,534.34	plasma \$ 32,000.00
7/25/2018	Garinger	supplies	1,564.70	1,664.70		Mages	\$ 1,039.26	refueling \$ 1,000.00
7/25/2018	MISC	supplies	377.93	377.93		Plametek	\$ -	supplies \$ 2,001.54
7/25/2018	Plametek	supplies	120.41	121.01	112000	jeanlike profit	Ramsey	\$ -
7/25/2018	Beas	tuning assistance	560.00	500.00	8V-61	Reynolds	\$ -	tuning assistance \$ 1,000.00
7/17/2018	MISC	supplies	51.00	51.00		PlasmaFork/2710711	Lat	\$ -
7/17/2018	Lat	tuning assistance	400.00	400.00	41	Shawney	\$ 400.00	tuning \$ -
8/2/2018	Kate Bros	PlasmaForking	8.00	8.00	100010	81 L 10000 Sun Family Umbell	Shawney	\$ -
8/2/2018	Beas Bros	PlasmaForking	2,375.00	1,800.00	100010	7111 6 price for refueling	AC Plasmocraft	\$ -
8/13/2018	MISC	hardware	8.00	8.00	1010100	renew event drill bit sets	Beas Bros	\$ -
8/14/2018	Plametek	Danp-Chaser systems	4,858.45	4,858.45	112640		MISC	\$ 1,424.52
8/14/2018	Home Depot	supplies	2,534.34	2,534.34		Plasma Fork Supply	\$ 1,033.90	\$ -
8/14/2018	Home Depot	supplies	8.00	73.96		Mano Igni	\$ 113.55	\$ -
8/14/2018	Schall	Danp-Chaser systems	1,375.16	1,656.16	1027000-000	used credit for return	Almact	\$ -
8/16/2018	MISC	Danp-Chaser systems	400.00	400.00		10 and 6 6 end costs. Plasmacards.	Kurus	\$ 1,200.00
8/16/2018	Mano Igni	supplies	103.53	103.53		Home Depot	Ramus	\$ -
8/20/2018	Mano Igni	supplies	18.72	117.72			Confidence	\$ -
8/21/2018	Schall	Danp-Chaser systems	2,786.26	2,786.26	1030110		Adler	\$ -
9/13/2018	AC Plasmocraft	refueling	32,000.00	32,000.00	121202	SS L 270000, SS B 100000	metel	\$ -
10/2/2018	Kurus	PlasmaForking	1,200.00	1,200.00	222222	SS D 200000, SSB 200000	Hardness	\$ -
							Total	\$ 50,818.79
							Total Cost column	\$ 53,818.79
							Budget	\$ 6,000.00
							Left in budget	\$ 11,818.79

ADMIN

Tuning reminders

Use Inventory spreadsheet (sample sheet provided)

Room	Make	Model	Serial #	Year	Tech	Year	Tuned	Pitch	T By	T Date	T Next Date
102	SS	A3	301900	1940	SM	Multipurpose	10/13/19	440.6	ME	45	11/27/19
102	SS	B	399800	1956	SM	Multipurpose	10/18/19	440.8	SM	45	12/2/19
210	SS	L	300300	1940	SM	Studio	8/17/19	441.0	RS	30	9/16/19
210	Isosonord	214VC	51000	2018	ME	Piano	11/8/19	441.4	ME	30	12/8/19
220	SS-HB	B	605200	2017	ME	Piano	11/19/19	441.6	ME	30	12/19/19
250	SS	L	410000	1968	MT	Drama	9/23/19		MT	60	11/22/19
251	SS	AS	352100	1956	MT	Drama	9/18/19		MT	90	12/17/19
301	Knabe	Consol	150000	1911	MT	Drama	9/6/19		MT	90	12/5/19
306	Yamaha	C7	4470400	1988	SM	Music technol	10/14/19	440.8	SM	30	11/13/19
311	SS	L	329100	1949	KC	Practice room	10/12/19		LH	45	11/20/19
318	SS	D	180400	1917	KC	Practice room	4/7/18	440.6	KC	45	5/16/18
319	SS	L	403300	1968	KC	Practice room	8/24/19	441.2	KC	45	10/8/19
319	SS	L	272500	1931	KC	Practice room	9/30/19	441.0	LH	45	11/14/19
345	SS	L	409800	1968	LH	Practice room	5/20/19	441.0	KC	45	7/10/19
358	SS	D	580700	2012	LH	Practice room	10/18/19	440.8	KC	45	12/2/19
388	SS	D	584500	2008	MT	Vocal	11/2/19	440.0	MT	45	12/17/19
401	SS	B	245300	1928	SM	Classroom	10/15/19	440.2	SM	45	11/29/19
402	SS-HB	B	605000	2017	ME	Piano	11/4/19	441.2	ME	30	12/4/19
403	SS	B	272000	1931	KT	Classroom	8/20/19	441.0	SM	45	11/10/19
404	SS	AS	511800	1988	SM	Floater	4/28/19	440.0	LH	60	6/27/19
412	SS	B	247700	1928	SM	Jazz	10/18/19	441.2	SM	45	12/2/19

Tuning reminders

- You enter last tuning dates daily

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251	SS	AS	352100	1956	MT	Drama	9/18/19		MT	90	12/17/19
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412	SS	B	247700	1928	SM	Jazz	10/18/19	441.2	SM	45	12/2/19

Tuning reminders

- You set retuning interval, in days

Room	Make	Model	Serial #	Year	Tech	Year	Tuned	Pitch	T By	T Date	T Next Date
102	SS	A3	301900	1940	SM	Multipurpose	10/13/19	440.6	ME	45	11/27/19
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311	SS	L	329100	1949	KC	Practice room	10/12/19		LH	45	11/20/19
318	SS	D	180400	1917	KC	Practice room	4/7/18	440.6	KC	45	5/16/18
319	SS	L	403300	1968	KC	Practice room	8/24/19	441.2	KC	45	10/8/19
319	SS	L	272500	1931	KC	Practice room	9/30/19	441.0	LH	45	11/14/19
345	SS	L	409800	1968	LH	Practice room	5/20/19	441.0	KC	45	7/10/19
358	SS	D	580700	2012	LH	Practice room	10/18/19	440.8	KC	45	12/2/19
388	SS	D	584500	2008	MT	Vocal	11/2/19	440.0	MT	45	12/17/19
401	SS	B	245300	1928	SM	Classroom	10/15/19	440.2	SM	45	11/29/19
402	SS-HB	B	605000	2017	ME	Piano	11/4/19	441.2	ME	30	12/4/19
403	SS	B	272000	1931	KT	Classroom	8/20/19	441.0	SM	45	11/10/19
404	SS	AS	511800	1988	SM	Floater	4/28/19	440.0	LH	60	6/27/19
412	SS	B	247700	1928	SM	Jazz	10/18/19	441.2	SM	45	12/2/19

Tuning reminders

- Re-sort by "T(uning) Next Date"

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
	Room	Make	Model	Serial #	Year	Tech	Year	Tuned	Pitch	T By	T Date	T Next Date				
102	SS	A3	301900	1940	SM	Multipurpose		10/13/19	440.6	ME	45	11/27/19				
102	SS	B	399800	1956	SM	Multipurpose		10/18/19	440.8	SM	45	12/2/19				
210	SS	L	300300	1940	SM	Studio		8/17/19	441.0	RS	30	9/16/19				
210	Isosonord	214VC	51000	2018	ME	Piano		11/8/19	441.4	ME	30	12/8/19				
220	SS-HB	B	605200	2017	ME	Piano		11/19/19	441.6	ME	30	12/19/19				
250	SS	L	410000	1968	MT	Drama		9/23/19		MT	60	11/22/19				
251	SS	AS	352100	1956	MT	Drama		9/18/19		MT	90	12/17/19				
301	Knabe	Consol	150000	1911	MT	Drama		9/6/19		MT	90	12/5/19				
306	Yamaha	C7	4470400	1988	SM	Music technical		10/14/19	440.8	SM	30	11/13/19				
311	SS	L	329100	1949	KC	Practice room		10/12/19		LH	45	11/20/19				
318	SS	D	180400	1917	KC	Practice room		4/7/18	440.6	KC	45	5/16/18				
319	SS	L	403300	1968	KC	Practice room		8/24/19	441.2	KC	45	10/8/19				
319	SS	L	272500	1931	KC	Practice room		9/30/19	441.0	LH	45	11/14/19				
345	SS	L	409800	1968	LH	Practice room		5/20/19	441.0	KC	45	7/10/19				
358	SS	D	580700	2012	LH	Practice room		10/18/19	440.8	KC	45	12/2/19				
388	SS	D	584500	2008	MT	Vocal		11/2/19	440.0	MT	45	12/17/19				
401	SS	B	245300	1928	SM	Classroom		10/15/19	440.2	SM	45	11/29/19				
402	SS-HB	B	605000	2017	ME	Piano		11/19/19	441.6	ME	30	12/19/19				
403	SS	B	272600	1931	KC	Classroom		8/24/19	441.2	LH	45	11/14/19				
404	SS	E	411800	1968	MT	Prattler		4/20/19	440.0	LH	45	5/20/19				
411	SS	B	247700	1926	SM	Jazz		10/18/19	441.2	SM	45	12/2/19				
										OK		Cancel				

Piano moving

- Conventional method



Custom-made block

<http://pianoteksupply.com/product/132/Rubber-Bands.aspx>

Piano moving

- Jack in the Box
- Grand leg stand



<https://jansenpianobench.com/products/jansen-jack-in-the-box-piano-raiser>

Pianotek Supply Part #MD-221J

Pianotek Supply Part #MD-202G

Piano moving

- Wheeled box for legs and lyre



Piano moving

- Moondog tilter

<http://www.moondogmanufacturing.com/>



Piano moving

- KTT power mover

Six moves per charge



Piano moving

- KTT power mover

Six moves per charge



EDUCATION, STRATEGY, VALUE

Education, teaching

- Offer lectures within other courses?
- Offer a credit course?
 - Technical skills vs. appreciation (how much hands on?)
- Community engagement
 - Schools
 - Senior citizens
 - Private teachers
- MTNA, other organizations
 - Hungry for content, engagement

Opportunities to recruit help, engage community,
recruit donors, gain private customers!

Training your group

- Internal sessions
- Weekly meetings
- Conferences
- Group tour of factory or rebuilding shop
- Factory training

People who learn are 24% more likely to feel happy at work
Based on survey of 2,000 LinkedIn members in common business functions

Private work

- Additional income
- Growth
- Learning
- Freedom

Enhancement
Balance
Entrepreneurship
Community

Conflicts of interest

- Recommending family, friends, friendly stores, friendly brands
- Commissions on purchases
- Billing school for your work
- Billing school for products you sell
- Using shop for private work
- Using school name for private gain

Openness and transparency = trust, good relationship

Adding value

- Think creatively
- What is truly strategic?
- What creates new opportunities?
 - Internship?
 - Partnership with piano dealer?
 - Mentoring?
 - Engagement?

Adding value

- How can you change current conditions?

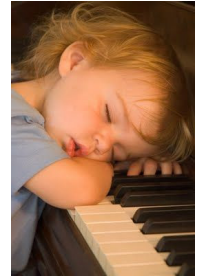
- Work longer hours?
- Donating used parts?
- Buy less expensive parts?

Or:

- Work with administrators
- Recruit and train assistants, interns, apprentices
- Expand community engagement
- Find donors

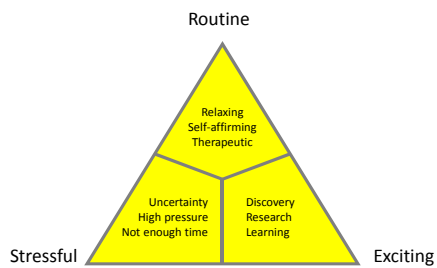
Protecting yourself and your team

- Physical well-being
- Preventing injury
- Dangers of working early/late
- Dangers of unsteady schedule
- Diversifying activity prevents burnout
 - Tuning, rebuilding, voicing, concert prep
- Conferences, training – a good break



<https://www.shutterstock.com/image-photo/young-child-sleeping-piano-keyboard>

Work balance



Q&A

Thank you!

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