

ALL THUMBS

WELL-COORDINATED PIANO TECHNIQUE

52 Awareness Through Movement Lessons to Transform Your Hand at the Piano

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ATM 9

Grasping & Thumb Opposition

Many monkeys cannot oppose their thumbs but grasp in a more primitive way.

Non-opposition grasping

Step 1: Lay your hand on a surface and keeping your fingers stuck together, slide your thumb away from them. Keep everything totally flat so it's a two-dimensional movement. And now slide your thumb back towards your hand to clamp against your second finger. In fact, even try grabbing a pen this way.



Illustration 14: The thumb and grasping: adduction

Get to know this movement well. There's no thumb opposition in this type of grasping, but it does activate certain muscles useful in playing keyboard and other instruments.

Opposable grasping: some variations

Step 2: Let the pen go, lift your hand in the air and press your thumb pad against each proximal phalange in turn. Now your thumb is *opposing* itself to your fingers—it's a type of grasping, hand's fundamental action. Can you

sense your thumb bending a different amount as it presses each different finger? How about pressing against each medial phalange in turn? Each distal phalange? Each fingertip? Take a good deal of time with each of these variations. Notice how your thumb tip wants to curl a bit when you press it against each fingertip in turn, but stays straighter when you press against the flatter part of the distal phalange.



Illustration 15: The thumb and grasping: opposition

Are any thumb muscles getting tired by now? I was hoping that would happen. This little exploration helps you realize just how much you may be under-using your thumb in your playing. Which muscles in particular feel tired, perhaps even a little sore? Perhaps it is just these you need most to wake up and activate.

Step 3: Press your thumb pad into your third finger proximal phalange. At first keep your fingers straight. Then while continuing to press, bend your fingers. What happens? Could you feel how the quite powerful pressure suddenly weakened? This again shows how curling the fingers can actually reduce the ability of the lumbricals and interosseous to grasp strongly—it can decouple grasping.

Grasping is indeed relevant to piano

But why so much about grasping? What does grasping have to do with piano playing anyway? The keyboard is flat, how can you grab it?

Unlikely as it seems, the grasping action of the thumb is virtually always present in piano playing. It's the single most empowering background factor in everything we do at the keyboard.

Step 4: Oppose your thumb to the middle of your finger pads a few times (see above illustration). Then place your hand flat on a table and try the same movement. The table blocks the fingers and thumb from moving together, and as a result, your hand 'stands up.' On the table, drawing your thumb towards your fingers becomes a powerful arch-generating action.

Step 5: Try this same motion without involving your thumb. It's a pretty strong movement even with your fingers alone, but sense how much more power appears when you again include your thumb. Your thumb acts as a strut giving added strength to the hand's entire structure—like a flying buttress in a cathedral, but even better, because the thumb's muscular effort offers *active* rather than static support for the arch. Can you sense that?

ATM 10

Thumb Pushups Revisited⁹

Most ATM's aim to wake us up physically by reducing effort to increase the richness of fine sensation. But sometimes our thumb is so asleep that vigorous exercise is the quickest way to give it a sense of healthy activity. Thumb pushups force the thumb to really work, as well as increasing its sense of healthy differentiation from the hand. If you have pain or injury issues, do not do this exercise at full power. Try an extremely gentle version instead, exerting the absolute minimum of effort instead of 'giving the muscles a workout.'

Step 1: Place your right hand flat on the table, and leaving your thumb loosely 'glued' to the table, move your hand to the left so your thumb rolls a bit and your second metacarpal-phalangeal joint ends up lying on top of it. In this position let your hand get heavy, feel how it mashes your thumb into the table. Your thumb and hand are clamped again, but it's no longer a strictly 2-dimensional adduction because thumb is now folded slightly in under your hand. Make it even more 3-dimensional by rolling (pronating) your entire hand further. Your hand flops further and further over your thumb until its outside edge (the fifth finger side) rises from the table.

⁹ Alan Fraser, *The Craft of Piano Playing*, 2nd edition (Scarecrow Press: Lanham, MD 2011). This ATM is an expanded version of that book's chapter 14, 76.



Illustration 16: Thumb clamped under hand, outside of hand rising from the table

Step 2: Keeping that heavy feeling in your hand, begin to abduct your thumb: it means take it away from the hand. You're trying to gradually open up the space between thumb and hand.



Illustration 17: Slowly open that space up

This thumb movement is sideways in relation to your hand but downwards in relation to the table. Thumb pushes down on the table, but because the table is immoveable, your thumb ends up pushing your hand towards the ceiling.

At first don't rise very far. Instead, cultivate a feeling of exceptional heaviness in your hand, making your thumb work maximally even to push the hand up even just a little bit. Let your hand rise by incremental bits, and for every little lift you achieve, let your hand fall back almost as far. Create the feeling of your thumb as a suspension spring bearing a considerable weight. Sense as graphically as you can where exactly your thumb muscles exert the most effort.

The springiness of this exercise is really important.

Step 3: Finally make your thumb push your hand up to its full height and all the way back down to squash your thumb into the table.



Illustration 18: Thumb works, hand finally soars to full height

Go very slow at first—the slower you go, the more you feel just how you do this movement, the more your thumb learns how it works. Remember, this is not just exercise but educative exercise. The more often you switch directions along the way, descending back down the way you came up and then trying again, the richer your kinesthetic experience, the more you can feel exactly which muscle is doing what.

Step 4: Return to the last steps of ATM 9—oppose your thumb pad to your finger pads again. Notice how differently your thumb behaves now that you've practiced this vigorous differentiation.

Thumb pushups get your thumb working more vigorously, but they don't seem so related to piano technique. Now we need to bridge the gap between generic thumb empowerment and its specific work at the keyboard.

ATM 11

Explore the Thumb's Entire Range of Movement on Two Planes

This ATM explores the thumb's entire range of movement on a flat surface, as the hand stands. In the illustrations I've drawn a square to roughly indicate the limits of its sliding in each direction. You could make your own square, or even try tying a pen to your thumb, and as you go through the exercise see how the outline of the square or trapezoid develops...

Step 1: Lay your hand flat with your thumb tucked in under it a little—thumb and forefinger roughly parallel. Gently pressing into the table, move your hand forward so it stands up. Keep moving forward till your thumb is as vertical as possible; you're standing on your thumb, second and third fingers. Then return to lie flat. Repeat this and explore it many times. While 'standing,' can you nudge your thumb even closer to your second finger? Let's call this 'nudged in' position "position #1."



Illustration 19: Position #1: The standing thumb tucked close to the hand



Illustration 28: The Roman arch leans forward

As you sway, also experiment with lightening the pressure until your fingers barely maintain contact with the table... and then gradually increasing it to the maximum again—always monitoring the changes in physical sensation that take place elsewhere as the rest of your body tunes into this feeling of a secure but moveable structure.

Step 3: Let the door frame lean towards your thumb. The 'lintel' remains horizontal but the two vertical parts of the frame angle towards you—then stand it upright again. The frame becomes even more flexible yet still maintains stability. How does the rest of your body adjust to this new movement?



Illustration 29: The Roman arch slanted towards the thumb

Step 4: Move the door frame towards the second finger which must bend, introducing a third changeable element in the door frame structure. Again, feel what changes take place in the amount of work, or cessation thereof, in other parts of your body to maintain the security of the arch.



Illustration 30: The Roman arch leaning towards the 2nd finger

Step 5: Combine steps 3 & 4—move the lintel of your door frame as far as it can go left and right.

Step 6: Or even combine steps 2, 3 & 4 which would move the lintel in little horizontal circles... How many new movements can you develop? How much more malleability can you develop in this Roman arch without undermining its structural integrity?

When you go back to the piano after this ATM, what changes can you note in how you play a scale, a chord, a melody? Can you feel your newly discovered Roman arch empowering the passage from 2nd to thumb, thumb to 2nd, thumb to the other fingers? Which changes are most noticeable - the new feeling in your hand, or the sound you're making? If you did this all with only one hand, can you now sense the differences between your 'pre-ATM' and 'post-ATM' hand?

The further difficulty of 'shifting gears'

At this point we've experienced the structural power of the thumb as it stands straight up, and also as it sways in standing. But you may have noticed when you played that the shift from 'standing' to actual 'walking' presents a further difficulty.

Standing on our feet is often a static activity in which the body's stable structure must be unlocked before it can move. We weren't designed to stand that way, but somehow we end up doing so more often than not. Similarly when we want to 'walk' on the keyboard we will often stiffen just as we're taking a step. Our attempt to maintain stability only blocks smooth movement. Then as soon as we've taken the step we compensate this stiffening by over-loosening our fingers. The resulting collapse undermines the hand's structural potency and prevents us from walking buoyantly.

This last ATM taught our thumb to be flexible even as it stands firm, overcoming that innate tendency to stiffen when standing still. Next, we'll aim to keep the Roman arch moving and functional, in malleable, unstable equilibrium, even as thumb and forefinger take that crucial next step into actual walking on the keyboard. We've approached the problem by gradual steps to give our neuromotor system the best possible chance of refining the coordination of what has now become a complex motion.

ATM 13

Thumb–Finger Walking

Step 1: Stand up into your now-familiar door frame position and sense how you could most easily and elegantly shift the weight gradually to your thumb, to the point where your second fingertip actually rises off the table and floats slightly above the surface.



Illustration 31: The Roman arch tilts to lift 2nd finger off the ground

As usual, notice what physical changes take place in your arm and body to facilitate this. Where are you beginning to perceive hitherto unsuspected tensions? Where can you let go of these to transform the quality of effort in the movement itself?

At first just lift your fingertip slightly and put it down on the same spot, but later, try dropping it into different locations on the table, a little over here or there... Always keep the 'lintel' well-primed—it's even more important for the lintel to function as a secure, firm structural element when one of the 'columns' lifts right off the ground!

Step 2: The same, but with your second as the standing finger and your thumb lifting.



Illustration 32: The Roman arch tilts to lift thumb off the ground

To increase ability, reduce pressure

Notice the strong tendency of your second finger to buckle—or to stiffen in the attempt to prevent collapse. Can you reduce pressure and adjust the angles till you find a way to 'stand gently,' to be more poised on your second finger when it stands alone? Again, monitor all the changes in physical sensation evoked by this strange movement—but actually it's not strange, it's very close to a standard legato! It just seems strange because we've broken it down into its constituent parts to understand it better.

Step 3: Finally begin to 'walk,' lifting your second finger and thumb alternately and attending to the associate sensations.

Step 4: Stand on your thumb alone, and raise your second finger so it stays curved but not curled. Its distal phalange points almost directly downwards. Keeping your finger as much as possible in this curved shape, 'play' as many different points on the table as you can, all the while feeling your thumb acting as a spring to lift your second finger as high as possible in the air between

Chapter 3

each attack. The sense is of a very powerful, 'springy' thumb supporting the second finger's vital, exceptionally active and free movement.

Do your fingers have a different sensation from their usual feeling on the keyboard? Here it's not relaxation that frees the finger but *structural, functional support.*

When you stand on one digit while the other floats in the air, without any stiffening to maintain stability, you are close to unstable equilibrium. Physics tells us that absolute unstable equilibrium is unattainable, but giving your hand a tangible experience of something even approaching it will transform its whole sense of self—of how it moves, of what it can do. When you return to the piano after spending some time with each step of these ATM's, notice what has changed in your sound and in your whole physical relationship to yourself and your instrument.

Physical changes lead to intellectual and even emotional transformation

And can you even perceive other changes related to the physical ones? Is your intellectual process more clear? Is your emotional tone a different hue? After spending time with this almost obsessively physical experience, feel what kind of integration takes place in you when you relate sensation back to musical *intention* and *action*, the synthesis of body, mind and emotion in playing.

4 The Thumb and Your 'Harpsíchord Hand'

We've just taught our thumb and forefinger how to walk on the keyboard, but piano technique in its first incarnation didn't use the thumb at all! Harpsichordists before Bach left it hanging while their four fingers stood equally on the keyboard, their knuckles forming a symmetrical, horizontal arch. They completely avoided the thumb's inconvenient tendency to prop one side of the hand up and tilting it to the outside.



Illustration 33: The old-style harpsichordist's hand on the keyboard

This ATM explores how the fingers worked on the keyboard before they gained the help of the thumb, shedding light on the 'thumb problem' by temporarily removing it from the picture altogether.



Illustration 38: Hand clamps thumb to table

Step 2: Begin to resist your hand's downward pressure with your thumb, using it to push your hand up a little—but keep pressing down with your hand. Your 2nd fingertip begins to reach for the sky—it's the first stage of a thumb pushup—and the bulging first dorsal interosseous subsides.



Illustration 39: Thumb presses to lift hand isometrically

The first dorsal interosseous worked to clamp thumb to hand, but now it lets go as other muscles (the thenar group) work to move thumb away from the hand.

Step 3: Open and close the space between your thumb and hand, palpating the first dorsal interosseous and feeling it alternately bulge and reduce in size.

Step 4: Stay standing on your thumb, halfway up into a thumb pushup, and begin to move your flat, whole finger down towards the table without sinking your hand. Palpate your first dorsal interosseous, and notice that a different part of the muscle contracts to press your 2nd finger into the table top:



Illustration 40: Standing thumb, 2nd fingertip clamps to table top activates different part of first dorsal interosseous

Step 5: Raise your 2nd finger again, lower your whole hand to clamp it to your thumb, and in this position clamp your straight 2nd fingertip to the table. Feel both parts of the first dorsal interosseous now working full time:



Illustration 41: Medial-lying thumb, while 2nd fingertip presses into table—most complete first dorsal interosseous flexion

T's concern with arm weight was totally counterproductive. I suppose when you walk down the street your weight is involved, but you don't spend a lot of time thinking about it. I had to divert T. from this obsession, focus on a completely different set of parameters. The bird beak was the best tool I could come up, an effective anti-arm weight strategy that solved multiple problems all at once.

ATM 20

The 'Thumb Corkscrew'

But to address his thumb inversion I dreamed up a 'thumb corkscrew' motion for parts of the Liszt sonata where his thumb had been handcuffing him by pulling upwards.

Be rigorous about the alignments

When I teach this, most do it really cockeyed at first. It's a very efficient, virtually two-dimensional movement, but I see various parts of people's hands and arms shearing off in other directions. An overly bent thumb is one reason for this: it makes the movement too three-dimensional. Keep your thumb quite straight, neither flexed nor hyper-extended, with an almost straight line running from your thumb up through your radius (the inner bone of your forearm). You can let your thumb curve somewhat, but not enough to disturb its clear link to the radius.

Try it now:

Step 1: Place your left hand in front of you, palm down, fingers pointing more or less across your body to the right. Grab your left thumb with your right hand and pull it further to the right. This pulls your entire left arm across your body, and clarifies a straight line running from thumb up along the radius bone of the forearm. Do this several times. Try to sense the pull transmitting further and further up your arm. You can even feel it going all the way through to your shoulder: how does your left shoulder blade slide on your rib cage when it senses this pull?

Illustration 49: Pull your own passive thumb through an entire corkscrew motion



A: —push thumb to left



B: —return to neutral



C: —pull thumb to right

Step 2: Repeat step 1, but now when your right hand pulls on your left thumb, twist it as well till the left thumbnail almost faces downwards. The twist should finish just when you can't pull any further, and the 'untwisting' just when it arrives back at its neutral position. Although you apply torque only to your thumb, the twist is transmitted through your entire left hand, wrist and forearm as well—like links in a chain. Does the twist help your arm slide even further?



D: —twist thumb under

Step 3: Press your right thumb into a key and slide forward doing the same twisting motion...



Illustration 50: Thumb corkscrew on key:

A: — thumb pushes back



B: — thumb slides forwards

Again, feel echoes of this movement all the way up your arm... through your shoulder... and shoulder blade... right into your back...



C: — thumb arrives



D: — thumb twists under

Step 4: Another variation: press your thumb into the underside of your 2^{nd} or 3^{rd} finger's proximal phalange. Slide your thumb along the underside of your finger out to its tip and back again, continuing to press fairly firmly. Here your thumb automatically does the same twisting motion we just learned, on its own – and it pulls your whole hand into a twist as well.

Slide your thumb once again toward the fallboard on key, using the same twisting motion—has the movement improved?

Step 5: Place thumb on key and slide your 2nd in towards the backboard while twisting it the same way you did your thumb. Before, your 2nd finger was the tree trunk, your thumb a branch growing out of it. Now, your thumb is the tree trunk, your corkscrewing 2nd the new branch.

The next, most extreme variation explores corkscrewing in the other direction. It necessitates very extreme bending and twisting – if you have any pain issues, do it only gently. But for those of you with a totally healthy hand, going to the extremes here will open up something new in terms of thumb moveability and functionality.

Step 6: Make a loose fist with your thumb on top, your 5th finger lowest. Keeping this hand position play a white key with your thumb pad. Your entire fist hangs down below the keyboard while your thumb pad sits in its white key—thumbnail points upward.

Trying to keep your thumbnail facing up, gradually uncurl your fingers and somehow contrive to bring them to lie, more or less straight, on key.

You'll have to allow your thumb to rotate a little to get your fingers to the keys, but when your fingers get there, twist your thumb back so again its pad is once more on key, nail facing upward.

In this position, keeping your hand beside your thumb – your thumb is pretty much clamped to the side of your hand – bend and straighten your thumb's nail joint.

Step 7: Return to step 3 but this time bend your thumbnail joint to begin with and then straighten it gradually as you extend your corkscrewing thumb forward.

The thumb corkscrew is an unfamiliar action for our hands and for our brains—if you'd like to figure it out a little better before going on, skip ahead now to chapter 29, page 253, which turns your whole body into a corkscrew.

The third 'group' playing a crucial structural role in both grasping and piano playing is the first dorsal interosseous. Though named as one muscle it is actually several, originating in both the 2nd metacarpal and thumb metacarpal. This is the set of muscles that balanced out the hypothenar group when harpsichordists still didn't even use the thumb, and it still provides crucial structural and movement strength to the pianist today.

Voicing the top and bottom voices: anatomically supported

All virtuoso pianists have highly a developed hypothenar group—if you observe carefully, you can see the white bulge along the outside of the hand. It's as if the hand's designer knew we would need extra power in our right 5th for ringing melodic tones and in our left 5th for booming basses, and created the means in the hypothenars.

The thenar group and the first dorsal interosseous not only act as a foil to the hypothenar but also power the hand in their own right. The complexity of the thenar group is even more evident in this illustration that thins down the actual muscle bulk to clarify the structural underpinnings, showing the origins and insertions that conspire to move this particular lever in so many different ways.



Illustration 62: Thenar and hypothenar: origins and insertions

Various muscles in the thenar group have their origin in the bones of the wrist and the second metacarpal, but one of the largest, the adductor pollicis, originates in the *third* metacarpal for maximum grasping power. And just look at how many members of the thenar group there are—are you availing yourself of all that potential in the way you move your thumb on the keyboard?

The hypothenars supply additional flexion power to the 5th finger

We think of the 5th as weak, but it has more flexion power than any of the others: its hypothenar muscles originate way up in the wrist and provides more leverage than the lumbricals and interossei.

Take a moment now to stand on your 5th finger. Keep it straight and vigorously pull towards you to dig the tip firmly into the table and pull it towards you. Move your hand into 5th finger orientation to feel this power working most effectively. Can you sense now that this standing function works even better in the 5th than in your other fingers because of the hypothenars?

And now try the same standing with your 2nd finger – can you feel the first dorsal interosseous adding some oomph to the standing that the lumbricals and interosseous alone can't provide?

Finally draw your thumb across to your fingers. Can you sense its innate power more clearly now that you have the visual image of its muscles in your mind?

The lumbricals and interosseous may not be as substantial as the 'big three' of the hand, but they do need to move effectively in their own right. This next ATM goes back to the fingers and investigates the origin of their flexing power in a little more detail.

ATM 30

Where Does Your Finger Begin?

This entire exercise is done flexing the whole right second finger while palpating it with your left finger. You are trying to detect the actual anatomical upper end of the right finger: the epicondyle, where the thin shaft of the bone thickens out into the head. Please refer back to illustration 62 for an exact idea of its location.

Later on you should do all the other fingers in a similar way, and still later switch hands.

Step 1: Palpate the palm of your right hand immediately next to the base of your right second finger. If you press in to your right palm with your left index finger while doing a right whole finger flexion, you can feel the right finger move under the tip of your left, palpating finger. This is graphic proof that the finger ends further up in the palm than we generally realize. That crease delineating finger and palm is actually nowhere near the upper end of the finger. You can feel it: the proximal phalange goes right up into the palm.

Step 2: Keep palpating your palm with your left finger further and further away from the base of your right index while your right index continues to flex. You'll be amazed at how far you can go before you fail to detect any movement. You're trying to find the inner end of your right index finger by palpating its epicondyle all along its underside as you flex it. Go a little bit left and right as well to get a three-dimensional feel for this.

Step 3: Now try the same thing from above. Touch the top of your right second knuckle and do a right whole finger flexion: you can feel the knuckle move. This is because that top knuckle is not a joint, it's the upper end of the finger itself! Touch a little behind the right knuckle and flex again: you can still feel movement. You have to get completely off the knuckle, touching somewhere along your right metacarpal bone before you can feel a stable, non-moving bony surface under your palpating left finger.

The top knuckle is a part of the finger

Some of the muscles that move the finger insert directly into this epicondyle rather than further down on the shaft of the proximal phalange.



Illustrations 63A: The palmar interossei insert onto both the epicondyle and the bone shaft

This is the functional reason why this top knuckle must be understood as a part of the finger itself rather than a part of the hand, or even the meeting point of finger and hand. The actual meeting point is a little *behind* that knuckle, what we would normally consider a part of the metacarpal bone.



Illustration 63B: The dorsal interossei insert onto both the epicondyle and the bone shaft

The lumbrical originates in a tendon, not a bone

The lumbricals and interosseous are rather fascinating in their relationship. The lumbrical inserts into the middle of the proximal phalange, then snakes up under the metacarpal-phalangeal joint to its origin, not in the metacarpal bone, not in a bone at all, but in the deep flexor tendon.



Illustration 64: The lumbrical originates in the deep flexor tendon, inserts into the bone shaft only

Step 4: Hold your right hand in midair, palm down, and place your left fingers under your right forearm just behind the wrist: palpate that soft spot where the tendons are clearly perceptible. Let your right hand dangle, completely

limp, and flex one of your fingers. You should be able to feel the tendon tightening. Don't worry, there's nothing bad about this—it's what always happens when the lumbricals are involved in finger flexion, because they are rooted in those tendons.

These tendons tighten even though you are not curling the distal phalange. They don't participate actively in the movement, but they must contract enough to stabilize themselves and support the lumbrical in *its* contraction. It's as if the lumbrical was a long, thin muscle originating all the way back at the wrist itself (not quite, but 'as if').

There are four different tendons going through the wrist, one for each digit. Try to perceive the specific tendon that tightens for each finger—can you make the distinction?

The interosseous are firmly rooted in the bones themselves at both ends

The interosseous muscles are preferable for whole finger flexion because they are securely rooted deeply in the hand bones themselves and don't attach to any subsidiary tendons at all. They all originate in the metacarpal bone and insert into the proximal phalange—some along the side, others on the epicondyle itself (see illustrations 63, 65 & 66).

Step 5: Again cradle your right forearm just behind the wrist with your left fingers. This time place your right fingers on the table top with a nice tall arch so your forearm is well above the table. Pull quite vigorously with your entire, fairly flat fingers: again sense how those tendons tighten—don't overdo it! Just be vigorous enough to clearly perceive the tendons' role in supporting the contraction of the lumbricals.

Now do the same movement but much more lightly. It's almost as if you simply moved your arm forward and didn't flex your fingers at all—but not quite. They still do a tiny, subtle little pull, but you do indeed help them remain totally stress-free by moving your arm forward in sync with the fingers' effort. If you get it just right, you'll feel you actually still do a slight whole-finger flexion but the tendons in your wrist stay completely neutral—they don't tighten in the slightest. This is what it feels like when the interosseous muscles work in tandem to flex the finger instead of moving it sideways.

It may be hard to imagine how such a subtle movement could be useful in piano playing which is often a fairly strenuous activity. But when you're in a state of unstable equilibrium, or close to it, the effort needed to move the key is vastly reduced. And in general, the less effort used to move the key, the greater our ability to sense the key with unerring exactitude. This is why we aim, wherever possible, to replace a lumbrical finger flexion with the work of the interosseous. Of course, in an optimally capable finger, both muscle groups will come into play: the lumbricals for power, the interosseous for finer manipulative ability.

19 The Thumb in Arpeggios

Arpeggios offer a prime opportunity to integrate the thumb's work into your overall technique. Take the outward moving B flat major arpeggios in this Schubert sonata:



Musical Example 46: Franz Schubert—Sonata in A minor, Op. Post. 143 – D. 784, 3rd movement, mm. 24–5

My student flubbed it every time, falling onto the thumb notes but missing them because of the collapse inherent in the falls. I worked with her first physically then musically—either strategy alone wouldn't do the trick.⁴⁸

⁴⁸ Interestingly enough, this student (who also appears in chapters 25 and 28) was eight time zones away when I taught her—on Skype.

ATM 37

Integrate Your Thumb in Arpeggios

Step 1: "You're moving down onto your thumb notes. This means your thumb is passive and inert: it actually isn't doing anything; instead you are trying to push the key down with your arm. To cure this, move your hand up instead of down on your thumb note."

This was easier said than done. The falling down motion associated with the hand position shift was firmly wired into her reflexes and it took a great deal of mental effort on her part to change it. And we had to break things down into their constituent parts:

Stand up on the thumb

Step 2: "If you push your thumb tip straight down, as if you wanted to push it through the bottom of its key F, it makes your hand stand up. This is the opposite of the collapse it was doing before. Now your hand is high. Use the next two notes, B flat and D, to move your hand gradually down so it is already low when you reach your next thumb note.

The thumb best begins its stand-up motion from a 'crouched' position

'Logically we would like to do the opposite: to *make room* for the thumb to pass, by raising the hand. Passing the thumb under when the hand is at its lowest doesn't make any sense spatially, but it does *functionally*. If you raise your hand to let the thumb pass under just before the thumb plays its next note it is inevitable you fall onto the next thumb note! Leaving it low positions it ideally for a lovely, empowering, stand-up motion.

Step 3: 'To make this work and to cure yourself once and for all of your passivethumb-falling habit, lower your hand where you would normally raise it, and force your thumb to pass under it precisely when it's at its lowest point. The fact that you are now low means you are well-prepared to stand up on your next thumb note! This is the only way to make that preparation." She went very slowly and carefully, and gradually learned the new coordination, a radical departure from her habitual—a 180-degree about-turn in fact.

Integrate the new physical organization into a musical context

I knew that if I left things at that, this new learning would never be integrated. When she tried to play the entire arpeggio again it didn't work, because now she was totally absorbed in a physical choreography—I had to get her back into the music. This time I called attention to the musical flaw:

"Why does the note D consistently not sound well?" She hadn't noticed that her 4^{th} finger's note D was always weak and often completely inaudible. There was an obvious reason for this: whenever she got to the 4^{th} finger's note she would freak out because of the immanent position shift, and abandon her 4^{th} finger in a premature attempt to jump to the following thumb note.

If you want to jump across a stream, you don't stop standing on your jumping leg just when it's time to jump. Interestingly enough, when I called her attention to the sound of the 4th finger's note, it began to improve without me saying a word about her physical organization. She began to stand on it more, and even to use the power of her 4th launch her hand sideways into the next position. Her ear made her hand behave well.

Step 4: "Play the arpeggio again but make sure the D is loud." She tries repeatedly and fails many times before she gets it. When she finally does get it, the arpeggio immediately sounds well although we never said a word about her thumb. She is now playing an arpeggio without the 'up' movement on her thumb that I sought, but also without her habitual 'down.' As soon as her 4th developed a palpable, healthy physical relationship with its key, her hand now maintained its orientation to the keyboard—it could feel where it was and so had a clear basis for judging the exact distance of the position shift.

We did all this without ever talking about the physical - her ears alone had evened everything out.

But I knew that this as well wouldn't stick until we did still more to integrate it.

Step 5: "Play F-B flat-D-F-B flat-D several times without switching octaves.



Musical Example 47: Franz Schubert—Sonata in A minor, Op. 143, 3rd movement, repeated portion of m. 24

'Now play it more quickly, with a brilliant detaché sound... Faster!" She would never play it as fast as I was demonstrating; thus she didn't get the sound character I was looking for. Finally it started clicking in: her triplets had real verve, an almost frenetic, insistent energy that energized the listener as well.

It's not enough to play a *forte* note loud, a *staccato* note detached: there are many different characters of *forte*, and each degree of detaché evokes a specific, unique character. When you make greater musical demands on yourself, in terms of specific sounds that evoke specific characters, you will be automatically making greater demands on your physical mechanism—that's how you develop your ability.

Step 6: Her fingers were moving much more than was their wont—they had to, it was the only way to get that sound. When she could do this consistently well, I had her play the entire arpeggio with that same brilliant sound—it came off without a hitch! Her fingers were now so vital the position shifts weren't even an issue for her any more.

The real problem often lies behind under the deceptively obvious one

"The actual underlying problem is often completely different from the apparent one. You think the problem in this arpeggio is passing the thumb under and placing it accurately on its note in the new hand position. But now we've demonstrated that the hidden underlying problem was your lack of finger activation, especially your 4th finger, which in turn stemmed from your lack of a clear musical conception. You had no ideas what sound you needed to have, because you hadn't thought about the musical character. No, you were stuck in your struggle with the mechanical difficulty.

The solution to the mechanical difficulty lies first in having a clear musical conception, second in knowing what sound would express that musical conception, and third knowing which finger action would produce that sound. When you solved these three problems, your thumb problem disappeared altogether!"

But had we not done step 1 we might not have succeeded so notably in eliminating the thumb problem. Step 1 was perhaps necessary to *counteract her bad habit*—had there been bad habit we could have indeed done without step 1 and still succeeded.

Artists solve musical problems; students can focus too much on the technical problem

I told her that in other passages as well, she tended to 'play like a student, not an artist.' I meant that students tend to 'solve technical problems' whereas artists solve musical ones. *Fake* artists think they are solving the musical problems but don't attend to their sound, *really*, nor the physical organization they're using to produce the sound—but that's another issue.

20 The Thumb: An Antidote to Arm Weight

A jazz pianist came to me with pain in his thumb. J.'s classical teacher, an arm weight proponent, had literally told him, "The fingers are like cooked sausages, the hand like a pork chop, and you just flop all that on the keyboard to get the warmest, roundest, richest possible sound."

But when he did that, his fingers were lifeless and displayed no 'intelligence.' His sound had a certain percussiveness that I liked—I could hear clear attacks out of which grew a round sound—but it lacked precision: it was slightly bulky, sluggish and heavy. It was as if all his joints had received a foam injection treatment and the hinges couldn't move freely, exactly, unimpeded. It lent his musical inflection a certain stodginess as well.

All these problems had their most negative effect on his thumb.

ATM 38

Slide-Standing the Thumb to Empower It

Before explaining all this to J., I gave him the needed exercises almost without words. I reasoned if he experienced it before understanding it, he would better retain it. I didn't want his mind to get in the way of his learning. Follow along now yourself...

Step 1: I had him slide his right thumb back and forth along the keyslip while playing with his right hand alone (similarly to illustration 73, p. 188). On my DVD (chapter 3-ii) I play a simple scale to demonstrate this, but he got into a solo improvisation and became very nimble in navigating the melodic twists and turns that occurred to him on the spur of the moment, all the while standing/ sliding his thumb along the keyslip. I imagine Renaissance and Baroque harpsichordists, who never used their thumbs at all, must have possessed such agility. Instead of feeling cramped by the constraint, he very quickly adapted to it and used it to resolve two physical anomalies simultaneously: the 'limp finger-sausage' problem and the lack of thumb independence that had led to the pain.

J's thumb pushing itself down and away from his hand achieved individuation, and its new stabilizing strut nature prevented him flopping his lifeless fingers on key: now he needed to activate the fingers. They now moved freely not because he had loosened his arm, but because he localized the hand's standing effort in his thumb, eliminating the standing effort in the fingers themselves, against which they had been fighting.

We had freed the fingers just as arm weight technique aims to, but without the heavy, bulky quality of arm weight. His fingers now dropped into key (moved by a precise contraction of the lumbrical/interossei) from a metacarpal-phalangeal joint that was stabilized in space—his fingers now moved from a precise point instead of a joint whose position couldn't be felt clearly. He had skeletal exactitude. He loved the feeling and he loved the sense of definition, warmth and clarity his sound immediately acquired.

The look of his finger action hadn't changed that much, but the internal organization of their movement was transformed. His sound changed dramatically as well, increasing in both focus and richness.

Step 2: Next I had him place his entire thumb—literally all three thumb bones—on C natural, laying it flat in the keyboard and then mashing his hand into it from above (similarly to illustrations 36, 38, pp. 57, 60). The full weight of his second metacarpal bone lay alongside, almost on top of his thumb's proximal phalange. After having him slide this mashed thumb along the key surface, in towards the backboard and back out several times, I asked him while continuing this 'metacarpal thumb mash' to play C sharp with his 2nd finger. The mash allowed him to feel his skeleton much more graphically, and also forced his 2nd finger to feel its precise, tiny but totally individuated action. Again, the 2nd metacarpal-phalangeal joint was totally stabilized, this time with absolutely no muscular effort anywhere in the hand, providing an even more graphic differentiation between skeletality everywhere else and a precise, surprisingly small effort within that joint.

I wasn't entirely satisfied yet; his 2nd finger wasn't in quite the particular shape it assumes when there's a certain tonus but no superfluous parasitic contractions. The finger needed not to be trying at all, but not dead either: just ready. It's difficult to explain on the printed page—the precise alignment, the slight curve that indicates the finger is maintaining a readiness, a slightly heightened tonus, but is not parasitically deformed in any way. Perhaps I should say his finger *did* need to 'try,' but in an intelligent, alert way rather than soporific.

Step 3: Maintaining the 'clamp' and keeping his 2nd finger firmly rooted in its C sharp, I had him remove his thumb from the C and tuck it in under his second to play the note D. Now his 2nd metacarpal bone was more on his thumb instead of beside it—to increase this even further I had him roll further to the left, hyper-pronating until his hand was almost turned over with its inside edge resting on the keys (like illustration 47, p. 72), all the while keeping thumb and forefinger rooted in C sharp and D.

Step 4: When he rolled back to 'normal' position, thumb and 2nd still mashrooted in those two notes, his palm now depressing some of the keys to the right, I had his 2nd play its note again, then thumb C, 2nd C sharp, thumb D, 2nd C sharp, etc.—a hyper-skeletal mini-chromatic overholding scale. This helped him develop a whole new kinesthetic representation of thumb and 2nd finger—their independence and interdependence were brought into a kind of sensory hyper-relief. With the pork chop/cooked sausage flop, the bones remain undefined within their surrounding tissue. The mash goes a step further than relaxation, heightening the distinction in feeling between bone and muscle, keeping the flesh loose while the fingers find a way to move precisely. I'd never ask him to play like this, but what a rich 'sensory bath' it gives the hand and fingers, what an education!

When his wrist started to float up it reduced the "mashing" sensation, so I told him to keep it low. "You mean I shouldn't keep flipping that pork chop but just slap it on the grill and leave it there?" he asked. "Exactly!" I replied. I don't often advocate a high wrist or low wrist, but here was a functional reason to keep it low.

Step 5: Place your two palms together, straight fingers and thumbs clamped to each other. Try to move your clamped thumbs into the space between your palms. Feel how this automatically makes your metacarpal-phalangeal joints rise, bringing the hand into its natural arch shape. The further your thumbs go under, the more your hand rises up into the arch.

Earlier we noticed how the thumb tilts the hand to the outside, but this helps us feel the thumb's positive arch-generating relationship to the hand.

Step 6: Next we integrated his new experience of the thumb into his playing by using a 'drawing the thumb under' motion to play a scale. With his right hand in 'Chopin position,' I had him move his thumb slightly towards his 2nd as 2nd played—as if his thumb wanted lightly to touch his 2nd finger's distal-medial joint. Try this now. Notice that drawing your thumb in towards your finger makes your wrist and arm move. Let this happen; don't try to individuate your thumb from your arm but let it lead your forearm to the right. And don't lift your thumb as J. wanted to; keep it low, maintaining constant contact with the white keys.

When 3rd finger plays, allow your thumb to move a little further, towards the 3rd distal-medial joint. The same for your 4th & 5th fingers—your thumb 'follows' each successive note in the scale, creating a constant ongoing contraction of the hand, a consolidation of the hand's grasping action. This motion has a double advantage. It vitalizes the hand, cultivating its fundamental grasping motion, and brings the thumb very close to its next scale note as well. Thumb is already in under the hand, now all it takes is a subtle rotation of the forearm to tuck it a little further under and *voilà*, it's on its new key.

Step 7: When thumb plays its new key, don't let your hand fall down on your thumb. Your hand shouldn't push your thumb into its note. Make sure your thumb moves away from your hand into its note, consolidating the sense of your hand as a standing, potent bridge instead of a collapsing net. Done really well, the integrity of this bridge derives not from muscular effort but from sensing the alignment of the bones. It's similar to the skeletal sensation in step 2, just not so squished.

Step 8: Right hand plays an ascending scale, thumb moves under as in steps 5 and 6, but this time sliding along the vertical white part of the key just under the key edge. Feel how this makes your second metacarpal-phalangeal joint stand up. Learn, by sensation, how the thumb empowers the second finger by literally 'forcing' the second metacarpal-phalangeal into a state of potency.

Step 9: Again a right hand ascending scale, this time sliding thumb along the keyslip. Explore each of these three variants (sliding thumb towards finger pad, along the vertical part of white key, or along the keyslip), to see which one empowers your hand the most, and finally to have your hand learn its potent state better from all three than it could have from any single one.

Step 10: Between each of these three variants exist literally hundreds of degrees, 'in-between' paths along which you could slide your thumb. The more variations on this theme you try, the better your hand will learn the new organization, the more miraculously your scales will become bump-free.

We played around with this for awhile until I felt it was time to put the kinesthetic experience in a theoretical context—he needed to understand what had just happened.

Arm weight technique can be dangerous

The version of arm weight technique he had been using appeared to be skeletal but was actually not. And it was dangerous, actually leading to the pain it hoped to avoid. His previous teacher developed such a severe tendonitis he had to retire permanently from the concert stage. Using his hand's bony structures while not attending to their potent alignments put more stress on it than it could bear. J's sound also suffered. There was plenty of rich, singing tone, but each note lacked a certain precision of attack, and although the colour was beautiful, it tended to all be beautiful the same way.

The hidden stress in arm weight technique

How can the arm weight approach (which aims to eliminate stress) actually cause a stress so debilitating it leads to injury? The lumbrical/interossei moving the key is a stress-free action supported by the arm's other muscles in a stress-free way. But the same lumbrical/interossei contraction rescuing the arch from collapse is a high-stress action that can eventually lead to injury. Every time the metacarpal-phalangeal joint drops slightly in the instant of the key attack, muscles elsewhere must catch the joint and prevent it from further collapsing. The falling metacarpal-phalangeal decouples the healthy work of the lumbrical/interossei, forcing them to work in desperation, and forcing other muscles all around the hand, wrist and forearm to tense as well to help take up the slack. This is a completely different action from the precise, small flexion movement we cultivated with our skeletal interventions.

An arch can be low and still be full

People have pointed out to me that Kemal Gekić plays much of the time with a very low, seemingly fallen arch. But functionally it's not fallen, it's just low! You can drop your metacarpal-phalangeal joint completely, but if your lumbrical/interossei is still vital, active and potent, it's not fallen! It's not empty. The empty quality derives from a lack of correctly timed lumbrical/interossei activity, not from the position.

A case in point: I had J. differentiate his bones from his muscles in step 2 by dropping his second metacarpal-phalangeal joint instead of cultivating its arch shape—surely a Fraserian heresy! But mashing his second metacarpal-phalangeal into his thumb gave the joint external support, with absolutely no inner muscular effort, allowing him to sense the tiniest amount of lumbrical/interossei effort needed to depress the black key with a clear, precise movement of his finger. It took him a long time to find the absolute minimum movement needed—he kept doing it with some added effort, a trace of parasitic contraction here or there. But I was searching for a specific quality of sound and movement that only emerges when all the extraneous stuff has fallen away. It is not just better; there is something distinctly different about it, a quality of a different order. Hard to describe, but I write about it at length so you'll understand the importance of searching for it.

It's not the posture itself that's important, it's the internal actions. The word "posture" even suggests a fixed, held position whereas the term Moshe Feldenkrais coined, "acture," suggests the internal movement function a certain external look may imply: a set of skeletal alignments conducive to effective, free movement. Harpsichord technique, articulations and hand strength

If we abandon the 'relaxation school' or 'arm weight school' and return instead to the 'articulation school,' we're in effect improving our piano technique by reinstating aspects of harpsichord technique into our own. Maybe through rediscovering the technical and aural riches of this historical instrument, we can enrich the sound of our modern day piano.

A harpsichordist I taught displayed all the normal hand anomalies I'm used to dealing with in pianists—the lack of structural function, the over-relaxation leading to reduced ability, using the arm to move a dead finger into the key, which in her case had led to pain as well. She had come to me to deal with the pain issue, but I wondered whether when I worked with her, her sound would improve too. Would her harpsichord tone blossom the same way piano tone does when I showed her how to set up her hand? Lo and behold, exactly the same transformation took place. As soon as she discovered her hand's arch and started maintaining it while playing, the actual volume of her sound seemed to double. We 'know' that this is impossible, but everyone listening heard it. Not only that, her articulations gained in ease, variety and exactitude, so not only her volume increased but also her colour spectrum. It was fascinating to see and hear.

Landowska's 'contrary' technique

Virtually any modern piano pedagogue would frown on Wanda Landowska's hand, which looks headed for a sure case of performance injury.



Illustrations 77A: Wanda Landowska's hands on the harpsichord: one hand on two manuals

All that tight curling, all that claw-like hugging of the keyboard... surely she's tense as a tennis racquet! But the recordings tell a different story. You can't *get* that great a sound through tension. Wonderful articulations, enchanting singing lines, an invigorating rhythmic freedom full of integrity—this lady is *free, and* she knows what she's doing, even though her hand seems anything but relaxed.⁵¹



Illustrations 77B: Wanda Landowska's hands: the tight-fisted finger curl

Trying to get that 'bassoon' passage going, I find my hand assimilating her shape more and more. Although it looks tense externally, its inner feeling is one of 'priming'⁵²—perhaps taken to an extreme, but a healthy extreme.

Work of thumb-forefinger highlighted in mm. 5-8

And if I hadn't completely figured out the importance of the thumb-forefinger 'hip joint' in the first four bars, there was no escaping it when I got to the slurs in mm. 5-7.



Musical example 65: W. A. Mozart—Variations on Twinkle, Twinkle Little Star, Var. 3, mm. 5-8

⁵¹ *Mozart Sonatas/Country Dances* (vinyl record) Wanda Landowska, Piano (RCA Victor LM-2209, New York, 1956)

⁵² Honing the Pianistic Self-Image, 42-47

It's as if Mozart on purpose first provides you with an opportunity to figure out the importance of the arch, then at measure 5 says, "OK dummy, if ya didn't get it yet, now you're gonna *have* to!" It reminds me of the Chopin Etude, Op. 10 #4, where at the eruption of fury which launches the coda, the increased demands made on thumb and forefinger force you to get them working perfectly now if you hadn't already.

Musical example 66: Frederic Chopin—Etude in Csharp minor, Op. 10#4, mm. 71-3

In the Mozart my tendency is not to move my hand far enough to the right. This in turn causes my thumb-forefinger assembly to cave in, implode, disempowering me and in fact crippling me. I can still play the notes but I feel cramped, and that wonderfully free, bassoon-like sound has sadly disappeared. It takes a concerted mental effort to get my hand into an acture where

- 1) my 2nd maintains its eagle-talon, arching curved shape as it plays its note and
- 2) it continues to feel its integrity as my thumb comes into *its* key, completing the 2-note slur.

Not only do I move my arm and hand even further right to enable (2), I also ensure my thumb does an additional individuation movement, swinging down and trying to angle in under the hand as it plays. My hand goes right to help my thumb play left.

When I succeed, my hand is much further right than I am used to, and feels distinctly unrecognizable as my own. "Surely that's somebody else's hand doing that!" I think, but the sense of comfort, freedom, and above all the return of that wonderful, croaky bassoon sound makes it well worth the sense of disorientation!

Focus on the release instead of the key stroke

My old harpsichordist roommate Hank Knox told me harpsichord and piano technique are dissimilar because "harpsichordists deal with the release of the key much more than the down stroke." But he just described exactly what I'm doing at the piano: I focus much more on the key release than key depression, to develop every aspect of my technique—from control of tone colour and articulation to the resultant freedom from parasitic contraction. Here's how I go about it:

Musical example 69: Franz Schubert—Impromptu in C minor, Op. 90 #1 (D 899), mm. 1-5

'As your hand approaches the key you manage to stay loose. This is great: you avoid the temptation of stiffening up to 'withstand the onslaught.' But you also know that your structure is important in transmitting your force to the key, so in the split second you play, you do make an attempt to stand it up. You succeed to a certain extent though your arch is still less than ideal. But this octave 'G,' although healthy, doesn't possess a quality that would characterize it as the opening octave of this particular Impromptu.

'Healthy sound alone doesn't create individual character. This chord must render an emotional shock; it is kind of fanfare but not a triumphant one, rather an ominous one. It should galvanize you, galvanize your attention and magnetically glue you to the sorrowful, lonely melody that follows. Your octave did none of this; it was just fairly loud with a good, round, healthy tone. It was generic—and yes, I do mean to 'damn you with faint praise.'

Generic beauty ≠ musical expression

'The overall impression, in terms of musical execution, is one of extreme fogginess. Maybe you have some idea of this octave's emotional tone, but technically you are doing very little to achieve it. Your technique in general has very little to do with the specifics of musical expression—its raison d'être is rather the production of 'beautiful tone.' And because your impulse to relax often undermines your structure, you don't always succeed even in that. However, when you do succeed, the end result is generic beauty, *which has nothing to do with this Impromptu*. This Impromptu is indeed beautiful, but its beauty lies in its specific dialectic, a specific communication of a set of emotions, a progression of feeling states inherent within its melodies, rhythms and harmonies. Your technique's primary goal must be to manifest *this.*"

A healthy arch is only a means to an end

I rant a lot about the healthy arch, but my deeper concern is a technique that enables the strong, personal, individual expression of an emotional experience. A healthy, fully functional arch takes one an amazingly long way towards this higher aim.

ATM 48

Relate Your Technique Directly to the Musical Character

Your technical strategy should reflect the *character* of this octave. You may need a radical change in your thinking to do this, but if you succeed, your musicianship stands to benefit even more than your technique.

Step 1: Hold your hand in midair let your thumb and 5th approach each other—vigorously. Draw them in towards each other, strong enough to really grasp something.

Step 2: Now place your hand on key and do the same movement, with your prime intention being to administer a galvanizing shock to the piano. Schubert writes *ff*, then immediately proceeds to a *pp* melody, a single, ghostly melodic strand. This is the beginning of the Romantic era, where dramatic contrast and emotional intensity reign supreme. But how is this octave always played? *Forte* but not too *forte* because we don't want to offend anybody, we don't want to be stylistically inappropriate, and above all we don't want to create harsh tone. But the attack of these octaves should be so sudden that your fingertips literally sting as if someone slapped them. Only then will the musical and dramatic content of the octave begin to sound.

I can hear all the voices raised in protest: "But if you invest that much effort you will get a bang!" I beg to differ: there will be no ugly or harsh tone even in the strongest *fff*, if there is no hidden inner collapse of your structure. And when you play the octave this way, you will finally have a healthy, uncollapsing arch, because the action generates it.

Besides, the shock I'm aiming for has nothing to do with the actual dynamic volume. You can get this galvanizing effect even with a *mezzoforte*. The suddenness of the attack makes the effect, not its loudness. Try it, you'll see that if your hand makes a sudden, almost convulsion-like inner contraction just as you play the octave, even if you play it softly, it will have a different sound quality.

Remain engaged physically through the entire note for its complete musical content to sound

Don't relax your arm, but don't tense it either. This hand movement is *evolved:* a precise agglomeration of forces that manifests and is instantly finished—no residual tension left over, nothing from which you need to free yourself. You are simply *there*, poised, fully present, and fully ready for the next musical task. You are not fooling around with relaxation movements because they would be unnecessary and distractive—they would pull you away from your physical connection to the keyboard and from your aural connection to the ongoing musical entity, the note G. You are active because you are following the vibrational path of the note: a certain effort remains, enough to keep you poised rather than flabby. The galvanization of the initial attack continues through the entire duration of the note. You are there, energizing the octave as it sings onward in time, not by forcing it but by *not abandoning it*. When you relax, you lose contact with your expressive material. Remain engaged! When you keep engaged physically you stand a far greater chance of remaining engaged mentally as well.

Precise melodic inflection preferable to the generalized 'beauty' of generic relaxation

The way you play the first melody as well minimizes your chances of achieving any musical expression with it (see musical example 69 above). I see you dangling your hand to drop a more or less limp finger into each key in turn, producing a succession of really beautiful tones. And your ear is doing its musical best to connect them in an expressive way. Because you are a good musician you succeed fairly well in this, but because the connection from one note to the next lacks a sound physical basis, inevitably there's a certain laboured quality to the musical line, and I always sense the continual danger of a bump—an unwanted accent or a note too weak—and this actually does happen fairly often. Furthermore your finger, in overtly trying to remain limp, emasculates its main tool of musical refinement: its precise, refined, individual movements that lend colour and specific expressive nuances to each successive note in a musical line. The fingers must live in a context of action if they are to feel ready to do the job. Is the melody really so 'beautiful' when it lacks precise expressive nuance?

The elegant choreography of musically thought-out physical motions on the keyboard

Most prosaically we liken the action of the fingers on the keyboard to walking. The fine motor refinements needed for melodic inflection are more akin to a subtle choreography, a series of fine dance steps that bring a new dimension of nuance and expression to our basic means of keyboard locomotion.

The incongruous choreography of arm weight technique-the arm as a giant crane

But the arm weight equivalent in human walking would be to encase the entire human torso in a giant brace, and then to suspend that brace from a giant crane or a block & tackle assembly that could move you anywhere you wanted, always dangling you just above the ground and then lowering you until one leg or the other bumped the ground. This gives you contact with the ground. Then the crane raises you again moves you a little to somewhere else, lowers you again, and your other leg bumps the ground.

Perhaps the crane doesn't lift you high enough to make your first leg leave the ground, so there is even a semblance of connection, of walking. But your legs, instead of being occupied with simultaneously bearing your weight and moving you, have to do this weird job of trying to feel the ground and then adjust themselves to accommodate the movement of the crane to the next position. They are denied their basic task of standing you up in the gravitational field: everything they do takes place in a context of non-functionality. You are giving them double, conflicting messages. You want them to walk, but you don't want them to exert force into the ground which is what they would normally have to do to walk. Feldenkrais called his method "making peace with gravity." Ironically, arm weight technique *disconnects* you from gravity by denying the finger its walking, weight-bearing function.

Lowering the crane doesn't improve its functionality

Let's say your crane lowers your torso even a little further so your legs can exert some force into the ground. Now they can make you move this way and that—they control the orientation of the block & tackle. But because they are not responsible for standing you up in the field of gravity and bearing the weight of your torso, their hip joints can't feel how to work normally. The hip joints stay chronically emptied out, slightly collapsed, and as a result always feels a little weird and dysfunctional in trying to do their new, unfamiliar task. *Functional* walking is still absent in the legs just as the grasping action is absent in a hand subject to arm weight technique.

Replace the idea of arm weight with the idea of functional tonus

The starting point, the background *fact*, ever-present and ever-influential in walking on the ground is the hip joints' tonus that keeps us erect. What if the starting point, the background *fact*, ever-present and ever-influential in our hands was the equivalent flexion of the lumbrical-interossei and especially the first dorsal interosseous, a sense of the palm generating the action from its inner vitality? What if the starting point, the point taken for granted instead of the arm's weight was the grasping action, either in potential or in actualization? This would change everything. With a different starting point, everything that follows must be different as well. When I am a torso slung up in a brace, being dragged and dropped here and there, with my legs flopping onto the ground in a caricature of sensitive, vital contact, I am little different from a corpse.

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The path ahead is clear as a bell, but how to set down on paper the magic of Phil's lesson, where he makes my hand be a certain way physically, a way that grows out of his understanding of the music, and all of a sudden it becomes intelligent? This process is something much more profound than the mere physical: it is musical perception linked with biological, expressive gestures of musical thought.

I tend to write about it in terms of physical organization—about the thumb and forefinger being both independent and interdependent, how each must maintain complete moveability, based on skeletal support, without impinging on the functionality of the other, and how all this relates to musical inflection. How it's so easy to lose that: for instance for the non-playing finger to 'lose consciousness' and impede the playing finger.

But I've never been satisfied with my reductionist descriptions of my own experience. The physical nuts and bolts I spend so much time describing are but a pale reflection of the rich musical-expressive experience Phil takes me through. Perhaps precisely because my writing impoverishes what actually happened in my earlier studies, now it's once again a revelation and transformation when Phil takes me through the process anew. The results with his input are light years ahead of what I achieved on my own.

Why didn't I integrate what he showed me before? Compared to Phil's 'intelligent hand,' even Kemal's or Misha's is stupid. Mine is positively moronic. It's as if the intelligence of Phil's hand renders it physically so fine that it becomes translucent, so you can almost see the inner workings with transcendent clarity, but Kemal's and Misha's hands are still a little more opaque, and mine positively dense—sadly, lethargically material.

Part of it has to do with exactitude. If I am doing it 98% right, I might as well be doing it completely wrong. That 2% inaccuracy is enough physical poison to remove me entirely from the realm of artistry. I am back in the outer world of struggle, trying to repair, on the outside trying to get back in.

You have to do 'Phil's hand' completely. When the thumb is totally functional, *there is no struggle*. When it happens, all piano playing is easy. Most of my practicing over the years has been slovenly in this regard, approaching an ideal physical organization but leaving it just incomplete enough to leave me in the loop, years and years of the vicious circle, the endless problems, the constant straining.

Now for me to get it, I have to be totally concentrated on that goal. The feeling of a truly working thumb is an unfamiliar one: it's as if my entire thumb is contained within a tube and there is space between the tube wall and my thumb where it can move around a little. The feeling of an intelligent second finger is different from anything I've felt up until now. It is functionality taken beyond anything I ever imagined. I didn't achieve it earlier because it was not in my universe of possible realities. It was not in my self-image.

Phil probably took me there years ago, but I didn't possess a core self-image strong enough for this perfect physical and mental organization to map onto, to stick.

A key trait of the 'intelligent hand' is a healthy space between thumb and forefinger which the first dorsal interosseous does much to maintain. This muscle acts on both thumb and second finger—it's required to 'multi-task,' to participate in several different actions simultaneously.

When it is working well, the *feel* of this assembly is distinctive, its external look too. The curve of Phil's second finger (and mine when I'm doing it well) reminds me of the curve of a ballet soloist's arm—it looks supremely supple and yet it is far from relaxed. A sophisticated coordination of many muscular efforts conspires to create this impression of ease and fluidity—it's not just loose; there's a lot of work going on. To move well, bones need to fit snugly in their joints. Muscle tonus is contraction that is immobile but not unmoveable. It doesn't create movement directly nor does it block it. Rather it *facilitates* and enables movement by maintaining that snugness. Tonus is not tense, nor is it relaxed—it's *functional*: a sophisticated and complex group of muscular checks and balances that allow movement to take place at the highest possible level of control. It's the ideal middle ground between relaxation and tension.

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Preliminary Sketches for a Functional Hand

Step 1: Play an octave with the four fingers bunched together. This immediately gives a sense of separation and openness in the space between thumb and forefinger– they are not only forced apart but also forced to stay moveable. There's a strong muscular effort that does not interfere in any way in the moveability of the digits but actually enhances it. This feeling can be intensified by standing on the octave and moving forward, with the fingers either standing in place or sliding forward on key along with the forearm. If you slide forward there's a tendency for the center of the arch to sink—this doesn't empty the arch out here but increases its tensility. It's a good 'stretching exercise!'

Step 2: Play a small scale pattern fingered 2345, and as you move to each successive note, bring your thumb closer to the playing finger. Your thumb tries to follow the notes of the scale along the keyboard. Keep your thumb low, thumb pad to finger pad. Feel as if it's the thumb metacarpal that approaches the fingers. This motion activates the first dorsal interosseous as well.

Step 3: Stand on your thumb, lift your 2nd finger maximally, keeping your 2nd fingertip pointing more or less towards the key (but don't force it to point *totally* down). Your thumb makes a strong effort not to help your fingertip to the ceiling, but rather to help your 2nd finger's proximal-medial joint rise as high as it can. Your 2nd finger now has that special curved shape like the ballet dancer's arm. The considerable amount of effort throughout the thumb-forefinger all goes to create a smooth, spring-like motion of the 2nd dinger in no way inhibits the forefinger's free movement. Thumb's springiness helps 2nd out.

Step 4: Stand on your 2nd finger and use quite a lot of effort to keep it exactly in the ballet dancer curved shape with which you are by now familiar. When you do this right, your shoulder releases because your effort is localized where it's really needed—in the 2nd itself.⁶⁴ You'll also feel your first dorsal interosseous working strongly again. Then begin to slide your thumb here and there on the surface, maintaining the perfect shape of your forefinger. Notice what efforts elsewhere you must adjust to keep this happening. When your forefinger maintains that shape perfectly, your thumb retains its total moveability.

⁶⁴ This release in the shoulder, indicating you have restored effort to its proper locality, should happen often through this series—learn to recognize and cultivate it.

The corollary with the hip joint

Perhaps I wasn't able to integrate Phil's genius all those years ago because my entire body was relatively undifferentiated, especially my hip joints which held a lot of chronic tension. Now, after years of Feldenkrais, my hip joints are much looser than before. I've gone through all the stages of the process, first working for years to simply free them from their chronic contractions, then trying to deal with the resulting hyper-relaxation,⁶⁵ and finally restoring a newly evolved effort to the joint. This effort is of a totally new order, a different quality—it both supports me and moves me but does not constrict me. Tonus has replaced tension. As I cultivate Phil's intelligent hand, I can feel my pelvic hip joints wanting to indulge in their old 'supportive' contractions (contractions that are actually inhibitive), but I am now aware of myself enough to inhibit *them*, and this helps my hand's 'hip joints'—the space between thumb and forefinger—to keep working well. The same goes for my shoulders—back then I was completely unaware of my chronic tensions, but now I am much better at letting them go. When I think of what Phil was struggling against in my pre-Feldenkrais years, it's no wonder he had so much trouble with me!

The effortful hand

The other huge change stems from years of cultivating effortfulness in my hand itself through hard work with Kemal building up my hand's structural function and strength. Phil had trouble getting my hand's 'hip joints' to work well because they weren't used to working *at all*. They needed to learn to work even in a rudimentary way before they could benefit fully from Phil's sophistication.

Step 5: When doing a position shift, get each finger or group of fingers to the key(s) ahead of time. I've described it elsewhere but it bears repeating because it is one of the main things Phil emphasized when we resumed our sessions. This is not 'sight-reader's syndrome' where you arrive early and stiffen everything in the process, creating a halting, anti-musical feel to the music. Here arriving early gives you the chance to let go of all the straining, anticipating, deforming contractions in which you were unconsciously indulging as you scrambled to get to the keys and play them accurately. You arrive early and have a narrow window of time to let go, to reorganize, to prepare by loosening your hand and allowing it to feel with more sophistication and sensitivity the exact shape it needs, to mould your hand into that intelligent shape that serves you so well.

In the first stage of this practice you use the moment's pause to undo all your counterproductive physical habits and get your hand into its optimal shape and inner attitude. But by repeatedly creating this 'goal' image of your hand ahead of time, you will eventually learn *not to abandon* that organization when leaving one note or chord heading for the next. You arrive already well-

Remember my 'Georgetown' experience described in *Honing the Pianistic Self-Image*, p. 107.

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organized, ready to play: you now use the moment to simply fine-tune your hand and to confirm the *musical* image, how you want the note or chord to sound in terms of its expressive and orchestrative content.

Arm weight technique—no thanks

In all this I haven't once mentioned arm weight—for good reason: it would only make your hand go back to sleep. Arm weight technique essentially uses nonmovement to affect the quality of movement, working to actually sabotage the kind of functionality we cultivate here. If you are squatting on your haunches and want to stand up, no amount of sensing the weight of your legs or torso will help you. You have to stand up, and without the work of your muscles it ain't gonna happen!

The relaxation of arm weight technique tends to make your hand collapse: even a tiny, insidious collapse is enough to screw things up, because now the top joints of your fingers are falling, moving in the opposite direction from that needed to move the key. And when the joints over-loosen they are less than fully ready for action—so even if you avoid collapse, you are still not optimally organized for right action. Remember, the bones need to be snug in the joints to move effectively.

Why then has arm weight been effective in so many cases, and why do so many swear by it? In a certain context it *can* be a potent, necessary step. For someone locked in tension and non-movement, the freeing effects of arm weight can be astonishing and extremely valuable. At times I have taught pure arm weight lessons to some of my most gifted students. The degree of sensitivity acquired, the amount of movement restored to the fingers, hand and arm can be incalculably beneficial.

But for many it should be just a stage. Arm weight technique does not tacitly cultivate *function* in the way Phil does. If you make your hand *do* this or that, you will get the musical result you desire. Arm weight technique helps increase sensitivity, enriches the kinesthetic picture of the hand and empowers it to better fulfil the function commands we issue—it is a tool that helps us towards an end. Sometimes to avail ourselves effectively of that tool, we may well make it the end goal too. But finally, there is *doing*—directly, with fully conscious intention, in a way that empowers the hand more fully than arm weight can alone.

Arm weight technique is largely didactic—a means to an end. Using it in actual playing risks disempowering your hand, emasculating its movement wisdom.

Phil gives his students an optimally functional piano technique without ever referring to anything remotely resembling arm weight philosophy. Action, intention, organization, a pre-conceived image of the musical objective—these are the bywords of Cohen's mindful hand.