



QUOTES AND STORIES

From pianists

'I have been playing on the piano and I am starting to grow quite accustomed to the keyboard. Inevitably, of course, my first few hours of practicing has been wrought with awkward mistakes, but also with astonishing revelations. It goes without saying that chords which were merely played in wishful daydreaming are quite comfortably reached. That is not even the tip of the iceberg, however, as I saw, as I progressed in my practicing, that the whole gamut of piano playing is infinitely easier with the right keyboard size. Chord leaps, trills, scales, arpeggios, ascending and descending octaves could be played with virtually no effort in comparison to what I had to labor through hitherto. Consider, how I had neglected an Etude of Chopin's, after seeing that no matter how much I practiced this one passage, it can only sound at best clumsy and amateurish. Indeed, when I played it on the smaller keyboard, I thought to myself, "Wow, I sound like Yefim Bronfman!"' (*Daisuke Sakai, November 2014*)

'Redoing these pieces, I feel like I'm getting a second chance at life. It's amazing that I get to give a decent performance after just a few hours of practice on a Steinbuhler, versus the crap that came out for months on a full-size keyboard. Amazing, but also the most obvious thing. While there, David [Steinbuhler] had me try all three keyboard sizes, which was actually more informative about the ergonomics of proper playing than anything I've ever read on the subject.' (*Tiffany Goff, <http://skinnykeys.tumblr.com/>, September 2014*)

'I thus began the great discovery of what it feels like to play the piano with larger hands. It was like an epiphany. All the touches and techniques in piano studies – and I stress ALL of them – were made easier by a factor of a hundred.' (*Christopher Donison, Executive Artistic Director, Music by the Sea, and co-inventor of DS keyboards, British Columbia, Canada, 1998.*)

After a first try-out:

'I first ran through some scales and various small works from my limited repertoire on the 6.5 Steinway, just to limber up and re-establish my touch and spatial sense after a long time away from my piano. Then I tried the DS5.5. I knew - right away - this one was too small. While I have a small hand, I have a broad palm and it was difficult for me to execute the thumb under and finger over manoeuvres during scale runs. Back to the 6.5 to remind my fingers of the "standard" keyboard landscape. Then I sat down at the Charles Walters with the DS6.0 reduced scale keyboard. Carol, like Goldilocks and the three bowls of porridge this one was "just right!"

What a revelation! What unalloyed joy! For the first time in my life my hand fell properly on a full octave with no stretching. I could get a 9th with the same slight stretching I had with an 8th, a 10th was even possible. Chords also felt natural and relaxed - as they should be! And, importantly, because the 6.0 keys are not as narrow as the 5.5, I could execute scales and arpeggios cleanly and with minimal adjustment. Soon I was playing with a smooth and confident touch. I was so excited and happy I do believe I teared up a bit, so many thanks to you [Carol Leone] and David Steinbuhler for this opportunity.

After an hour, David Brown, the piano technician showed up, and we spent over ninety minutes talking pianos and your keyboards. I now understand his refusal to call the 6.5 keyboard "standard" or "conventional" it should be neither. After all, one doesn't call a full size violin or cello "standard," it is merely a 4/4, and smaller ones are 3/4 or 1/2 -- and WIDELY AVAILABLE! Why should the piano be any different? I will soon be ordering from David Steinbuhler a Charles Walters upright with the DS6.0 keyboard. I expect it to dramatically change my playing and inspire me to take on the more challenging works from the Romantic period. I have informed David that I will be proud to make the piano available to curious pianists and piano teachers in my area, as my small part in promoting your important work.

.... as an engineer I learned the first law of ergonomics is never try to adapt a human being to the machine - you adapt the machine to the human being. Your efforts are helping to eliminate unnecessary pain, adding years to a pianist's playing life, and - greatest of all - opening up so much glorious music hitherto closed to those of us with smaller hands.'

(*Jon Bromfield, Washington State, July 2015*)

After 6 Months: 'My 6 Month love affair with my new Charles Walter Studio Upright with the Steinbuhler DS6.0TM reduced scale keyboard'

First of all, Charles Walter is to be commended for arranging with David Steinbuhler to have David's reduced scale keyboards as an option for their highly regarded upright pianos. I ordered mine in high gloss ebony and it is almost as much a joy to look at as it is to play. I should mention that most non-pianists will not notice the 6.0 reduced scale; it looks just like a regular keyboard.

Until you play.

I took delivery of my new 45 inch studio upright mid-January this year [2016]. I only played it a bit until it had a chance to acclimatize to the high humidity of the Puget Sound area and I could arrange for a RPT to regulate and tune it, about two weeks. Wow, what a difference that makes! The Charles Walter upright, properly tuned sounds better than most small grands! When it was all done, I sat down for my first long session.

I began with some easy polyphony: long played selections from the Mary Magdalena Notebook, the Bach Inventions, Scarlatti sonatas, and the like, mostly to see if there was much of a conscious adjustment necessary. There was, of course. After all, the keys are a bit skinnier. But as I found when I played this same keyboard at Carol Leone's studio at Southern Methodist University in Dallas, it did not take long to adapt and soon I was playing almost as well as on my beloved Roland HP 207 digital piano - almost, because I discovered an acoustical piano is really unforgiving of uneven touch, chord voicing, and irregular tempo. You really hear every defect in your playing, which is a good thing because it forces you to concentrate on your technique, to get a nice sound.

(By the way, to answer the "digital vs. acoustic" controversy: a serious pianist needs both. They augment and complement each other.)

I played for an hour or so and then went back to the Roland digital. A short bit of conscious re-adaptation was all that was required. In the months to follow I discovered going from the digital (full size keyboard) to the acoustic (6.0 reduced scale keyboard) and back became effortless and soon unconscious.

But I had bought the reduced scale keyboard because I have small hands for a guy (fully stretched I can only reach an uncomfortable 8th) and I wanted to play all that glorious homophonic Romantic era piano music. That's where the reduced scale keyboard will reduce you to tears. Just that little bit of difference is all the difference in the piano world! It was so discouraging to flub octaves and awkward chords and so not able to play the music I love that I limited myself to mostly baroque. Now I have another two hundred years of great piano music to add to my repertoire! The piano has changed me from a stuck-and-suck-at-one-level-occasional-player to a three-hour-a-day-at-least-hard-core-piano-maniac, now joyously exploring the simpler Romantic era sonatas. Thank you, Charles Walter, David Steinbuhler, Carol Leone, and all those advocating for reduced scale keyboards.

Now if we can only persuade Roland to make a reduced scale digital keyboard so I don't disturb my neighbors with my midnight Beethoven sonata recitals! (*Jon Bromfield, Washington State, July 2016*).

'I am a better pianist than I thought (those of you who know me will realize the gravitas of that statement). Many of my previous struggles were related to playing the wrong-sized keyboard. How ecstatic I am that I can play four-voiced chords at any range of the piano without performing gymnastic feats to align my torso, elbow et al at a precise angle in a millionth of a second (and this is just for Schubert, people!). Now I can simply focus on how I want it to *sound*.' (*Jess Johnson, Professor of Piano and Piano Pedagogy at the University of Madison-Wisconsin, <http://feelingthesound.org/2015/07/21/small-hands-big-heart/>*)

'At SMU, I studied and performed on a DS5.5™ built by Steinbuhler & Company that has a 5 1/2 inch octave as opposed to the conventional 6 1/2 inch octave. For me, the adjustment was instantaneous. I was amazed that my hands no longer felt small; for the first time, I felt like a big person at the piano. Coupled with this delightful surprise, there was also a painful realization that this is the confidence and physical comfort most people feel at the piano.' (*Thoughts for Pianists with Small Hands: A Testimonial by Grace Choi. <http://www.thehealthymusicianproject.com/blog>*)

'You need to allow yourself at least a couple of days with a DS keyboard to begin the journey of discovery of exactly what it is that you have been missing, and the unnecessary obstacles you have been facing all of your life. Trust me when I tell you that it is lot more profound than merely "stretching" a distance between any 2 digits.' (*email from Christopher Donison to Rhonda Boyle, 31 Dec 2006*)

'For every pianist who suffers pain in silence: A year ago I was preparing for my piano senior recital. I had to play through the pain, there was "no other choice", then the pain was unbearable and permanent. The headaches wouldn't allow me to sleep, my hands couldn't grab anything. I had to stop playing my beloved piano. I took out everything that reminded me of piano and started a new path. I love the piano deeply; I have spent more time with it than with anybody else in the world. The words "... you would never play the piano again" made me fall into depression. When I lost the piano I lost my

identity, I had a couple of suicidal attempts. But as I was studying for a physics test music called me. For the first time in six months, after not listening to any piano or classical music a Chopin nocturne was played. I couldn't stop it, I had to hear it, all these memories came to me, I was bawling. I knew that I had to come back and fight for what I love. God was merciful and gave me a piano teacher that supports me and we started on a new repertoire. This semester was rough as the pain remains but not as bad as it once was. I've done everything that the doctors, therapists and teachers have suggested to me yet the pain was getting worse and permanent again. I met Dr. Carol Leone and asked her if I could try the smaller size keyboards. She said I was welcome. I traveled to Dallas. I was in so much pain, I didn't know how I was going to play because even driving was so painful though I had faith that God works in mysterious ways. Once I started practicing on the 5.5 keyboard something unimaginable happened. I was able to practice from 9:30am - 7:00pm. When I reached the hotel I was indeed mentally exhausted but my arms were fine!! My back, neck and arms were relaxed. Even the permanent pain was diminishing; I didn't use any of my anti-inflammatory creams or painkillers! How can that be? At the next day I woke up eagerly to practice some more as I was going to have a lesson with her. To my surprise it was not hard to adapt to this smaller size piano, in fact it fitted just right. Now I truly believe that size does matter! To you dear reader, there's hope... Can you imagine if we all wore the same shoe size? Life would be miserable. Don't believe me, just give it a try. Merci, grazie, todah rabah, gracias, xie xie, terima kasih, danke... Thank you Dr. Leone for showing me a way I never imagined before...' (*Ely Ocampo, July 2016*)

I recently was blessed to have the chance to play Linda [Gould's] 7/8 piano in Victoria BC. This was the first 7/8 keyboard that Donison-Steinbuhler sold, and, wow, is it in good shape! For anyone concerned with whether this type of adaptation of the existing key mechanism can last, it sure has! Aside from how nice the piano sounded, the experience of playing the smaller keys was eye-opening. I hadn't had the chance to play for an extended time on one of these previously, and I was surprised at how easily I adjusted. Within minutes, I was able to play repertoire with only a few mistakes of misjudging spaces between notes (usually octaves, for which I am used to just splaying my hand out; I found myself accidentally hitting ninths, which I can't do on a regular keyboard, no matter how much stretching I do. By far, the best part of playing the 7/8 keyboard was that I was able to play for hours with absolutely no pain or strain. For years now, I've had arm and back problems from trying to create force while my hands are stretched to their absolute limits; on this keyboard, absolutely none! I was able to pull out pieces I'd previously given up on, such as the Pathetique, and could play them with ease. Linda was lovely and gracious, and allowed me to come back and play again the next day, to ensure that I liked the keys. She also shared her own story of how easily she is able to transition between sizes of keyboards for performances. (*Monique Fournier, Calgary, Canada*)

I was sceptical at first. It didn't seem real. Humans naturally think of smaller things as a mere version of the whole. Our jargon for smaller things: mini-me, bite-size, fun-size, carry a connotation of inferiority. It's not the 'real' thing because it is smaller. And that is what it felt like at first, playing on a piano where my fingers don't have to strain for an octave, feeling like a giant with control over the keyboard. Instead of feeling a sense of relief that I could finally play all the Russian romantic literature I wanted, I felt ashamed. It was cheating the system with a smaller piano.

It took a few months to get over it. Everything is just perspective: from ergonomic keyboards to my attitude. A quality Beethoven Concerto is a better Beethoven Concerto no matter what size of keyboard it is played on. Then there is the fear that I am misdirecting myself. In the 'real' world there are no such things as modified keyboards. By getting comfortable with this keyboard, I might be pampering myself. I will delude myself into thinking that I can play all the Schumann I want and then graduate and realize I better stick to Mozart and Bach.

It is this anxiety that still sticks within me, but I am reassured by one thing. Today, I played on a regular sized keyboard the literature I usually practice on a 5.5. It didn't sound bad at all. Either my hands are slowly getting bigger, or playing on a smaller, more comfortable piano has allowed me to focus on my tone rather than stretching for octaves.

For some strange reason, I think I'm improving. (*Eliana Yi, Dallas, Texas, 2016*)

I'm the ecstatic owner of a new DS5.5 keyboard for my Steinway B! This is the culmination of a long, thoughtful journey. An integral part of the process was studying this website (PASK) and everything linking to it. For a long time I was sceptical that this might be over-hyped. But now, there's no question in my mind that this breakthrough has actually been vastly *understated!*

This is such a profound, life-changing journey. Now that I am in the autumn of my years, I am trying not to dwell on the years and hundreds of hours wasted trying to do things that are physically impossible for me to do! And though some of my teachers called me "gifted," no one was honest or kind enough to tell me the truth, so I just kept pounding away. One of the first things with my new 5.5 was to work out the gnarly 2-measure passage in the Rach op 3/2. After hundreds of hours of drills [in the past], it took about 20 minutes to master it. The wasted effort nearly makes me angry. I now understand, that in reality I couldn't play the large one before, a fact that was long hidden by lots of self-deception telling me I needed more discipline and practice.' (*Anonymous, Olympia, Washington State, 2018*)

'There is a man now in Pennsylvania who manufactures narrower keyboards.....I went down to Dallas where there was a very nice piano teacher who had one. It was fantastic. I was suddenly playing all these things that I can't play anymore.' (*Abbey Simon, USA, from his biography: 'Inner voices', 2017*).

The following quotes were published in Boyle, R., & Boyle, R. 'Hand size and the piano keyboard. Literature review and a survey of the technical and musical benefits for pianists using reduced-size keyboards in North America.' Proceedings of the 9th Australasian Piano Pedagogy Conference, Sydney, Australia. 2009. www.appca.com.au/2009proceedings.php:

'A significant reduction of tension (psychological and physical) associated with octaves and great spans has resulted in a far more pleasant and more secure playing experience...Subsequently, I found myself focusing more on tone and technique and mostly, the music itself. Joy.' (Caroline Duax, New York)

'For me, the most enjoyable aspect of playing on the reduced-size keyboard is how it felt: finally I was playing on a piano that was the right size for me. It was as if I had been trying to walk around in shoes that were a size too big and then at last I got a pair that was the right size. Everything, from runs and leaps to sound and memorisation, was easier. Also, I had to spend less time working on the technical issues, which allowed me to focus more on the musical issues. My senior recital that I played on the reduced-size keyboardwas by far the strongest piano performance I ever gave.' (Nicole Halton, New York)

Adapting and the benefits of practising on narrower keys

'My first attempt at playing the new keyboard resulted in over-shooting octaves, but this tendency was much reduced after 30 minutes or so. Within an hour, I felt reasonably comfortable and was able to play existing repertoire with no great difficulty. The narrower black keys were not an issue. With some repertoire, I am now able to play previously omitted notes or use more appropriate fingering. Becoming secure with such changes requires just a few practice sessions, as is normally the case when making these sorts of changes.' (Rhonda Boyle, Melbourne, Australia, Boyle & Boyle, 2009.)

Practising on the narrower keys actually makes it EASIER to play a large key piano (but you won't want to any more, unless you have to). Playing a piano that 'fits your hand' allows the pianist to release a tremendous amount of subconscious tension. It simply changes the way you approach a piano. This new knowledge is transferred to the large keys and you play with much less tension and more accuracy. The notes you can't reach... you let them go. (Linda Gould, Victoria, Canada – Response on to a question about playing a 'normal' keyboard after having done substantial practice on one with smaller keys. 'Slipped Disc', December 2016)

'Our expectation was that it might take days or weeks to adjust to this keyboard. In fact, we found that it generally takes a pianist less than an hour....Those who regularly play both keyboard sizes, as I do, are familiar with both, much as one might be if driving two family cars. Organists and harpsichordists regularly deal with this phenomenon without problems, Violinists who also play the viola experience the same type of dual ability.' (Dr Carol Leone, Chair of Keyboard Studies, Meadows School of the Arts, Southern Methodist University, Dallas, Texas, 2003, p 29. 'Goldilocks had a choice.' American Music Teacher, June-July 2004. www.steinbuhler.com/GoldilocksFeature.pdf)

Reduction in pain, injury and tension

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Description of pain and injury: 'Hand and arm cramps. Hands went numb too. Shortened my practice time and enjoyment.'

Change since using 7/8 (DS5.5TM) keyboard: 'Haven't had any since, and when I have the time, I am able to practice extended hours.'

Overall benefits: 'I like the comfort of playing, feels less frustrating. I never knew this was a possibility so it seems like a miracle to me. After 30 years of playing, to have this opportunity is heavenly. And now when circumstances call for my over-2 hours of practice, I don't dread the pain. My confidence has grown as a result.' (Amy Keffabers, Pennsylvania)

Description of pain and injury: 'Tension in arms and hands, numbness. I could not play for longer than 10 minutes and did not play for 2 years because of it.'

Change since using 7/8 (DS5.5 TM) keyboard: 'I can play for much longer and continue to play every day. I don't get frustrated from the pain and from being limited in my playing.' (Jen McCabe, Ontario, Canada)

'Before I got my Walter, I had chronic back pain, tightness from shoulders down which never resolved. With a few massages and adjusting to the 6.0, it's now all gone. My technique, posture, enjoyment is natural and effortless. The answer is the right instrument.' (Roger James: May 2015)

Power, voicing, musicality

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'When my 7/8 keyboard was installed, the first thing I did was try to play Rachmaninoff's G minor Prelude. I was amazed by the sound I could produce with the dense octave chords. I had never heard those sounds from my playing before!'

'Even though the first movement of Beethoven's Moonlight Sonata is not especially difficult to play, I had always struggled to effectively execute the two voices in the right hand since it requires a constant octave reach. When I played the piece on the 7/8 keyboard, I thought: 'Ah! So this is how it's supposed to sound and feel.' It was delightful!'

Memorisation

'I was very surprised by the difference it made in my ability to memorise music. Because everything was more natural and less awkward on the smaller keyboard, it was easier for my hands and muscles to learn the patterns and commit them to memory.' (Nicole Halton, New York, USA.)

Sight-reading

'Sight-reading probably has the most dramatic effect. When you are sight-reading difficult music (especially with other chamber musicians) you do not have the time to work out the easiest way of playing a passage, you just plow through it. I am talking about pieces like Brahms Horn Trio, Saint Saens Piano Trios'. (Linda Gould, www.steinbuhler.com).

Repertoire choice

'I couldn't ever get a Chopin Etude to performance level. Now I can!' (Linda Gould, Canada.)

'In my youth, I wanted to play a Rach concerto and my teacher said to me: 'Ingrid Haebler wouldn't dare!' implying, to my angst, that I was destined to be one of the Baroque/Classical pianists who never touched a Romantic work!' (Erica Booker, Sydney, Australia)

'My small hand size is no longer a handicap or the main criterion in choosing a piece of music to play.' (Jenny Wang, Ontario, Canada)

From a keyboard maker

'For pianists with hands in this area [span smaller than 8 inches], it is life changing. I've seen pianists weeping at the keyboard! They can reach a 10th for the first time.' (David Steinbuhler, co-inventor and manufacturer of DS keyboards, Pennsylvania, USA, Piano Podcast video, MTNA conference, 2007.)

Piano keyboard history

'The size of the piano also affected boys and girls differently. In the eighteenth century the piano had been no bigger than a harpsichord and often smaller. At the beginning of the nineteenth century, though – with pedals appearing at floor level, the keyboard expanding in both directions, and passages in octaves appearing regularly in the newest repertory – the piano suddenly became, for children who learned it, a daunting daily reminder of how far they had to go to measure up in the adult world. Children grow at different rates, and some grow into the piano earlier than others, but many more girls than boys have felt they would never have the instrument – or the part of the repertory created by big-handed men – within their reach. Since the instrument itself has been unyielding in size, the pianist's seat has been the principal means of helping children, or players of different sizes generally, adapt to it.' (Parakilas, J. & others. *Piano Roles: Three Hundred Years of Life with the Piano*, Yale University Press, New Haven and London. 1999, p. 151.)

'In the eighteenth and nineteenth centuries, keyboard sizes were variable and pianists exercised their adaptability and flexibility. Because of mass industry production, twentieth century keyboards became somewhat constant, and pianists mistakenly bought into the idea that they themselves were as inflexible as the keyboards. Sadly we became ignorant of our own natural adaptability.' (Dr Carol Leone, Chair of Keyboard Studies, Meadows School of the Arts, Southern Methodist University, Dallas, Texas. 'Ergonomic Keyboards: Size does Matter.' *Piano Professional*, EPTA (UK), Summer 2015. www.carolleone.com/ergonomic-keyboards/)

'The one-size-fits-all approach has prevailed in the piano-keyboard world for nearly 100 years. And, like other one-size-fits-all systems, the largest was fitted, not the average....Manufacturers were not about to make an instrument that would cause some European Caucasian male who sat before it to say. "These keys are too small." What developed was a standard keyboard too small for nobody, but too large for many.' (Christopher Donison, Executive Artistic Director, Music by the Sea, and co-inventor of DS keyboards, British Columbia, Canada. 'Small hands? Try this keyboard, you'll like it.' *Piano & Keyboard*, July-August 1998.)

'Musical instrument design has evolved over time, and that is part of the problem we now face. In most cases, the designers of those instruments were men (rather than women) who lived and worked a few decades to a few centuries ago, mainly in Europe. They were likely to design instruments that they could use and that would be favored by the majority of musicians back then, who were mostly male. Today, musicians comprise a more diverse group with far more women, relatively few persons of European descent, and more persons with various physical disabilities. Nonetheless, we still play instruments that were designed for a fairly homogenous group of performers.' (Dr Ralph Manchester, Editorial, *Medical Problems of Performing Artists*, 21 (4), 2006.)

Stories from teachers

'I often witness pianists place their hands for the first time on a keyboard that better suits their hand span. How often the pianist spontaneously bursts into tears. A lifetime of struggling with a seemingly insurmountable problem vanishes in the moment they realise, "It's not me that is the problem; it is the instrument!" Following on that, the joy of possibility overwhelms them.' (*Dr Carol Leone, Chair of Keyboard Studies, Meadows School of the Arts, Southern Methodist University, Dallas, Texas. 'Ergonomic Keyboards: Size does Matter.'* *Piano Professional, EPTA (UK), Summer 2015.* www.carolleone.com/ergonomic-keyboards/)

Also from Dr Carol Leone: 'Yesterday I gave an audition lesson to an incoming graduate student. She played a challenging Romantic work with a lot of struggle, even though she intentionally left out many notes to accommodate her small hands. I then found out that she is an injured pianist, with chronic carpal tunnel and also nerve damage in her right arm. Then she told me that she came to SMU specifically to study on the 7/8 keyboard. So, over to the 7/8 Steinway we went and she proceeded to play passages from her piece perfectly with all of the notes! She looked at me incredulously and burst into tears, apologizing over how emotional she felt and exclaiming how she has been trying for years to "discipline myself to stay away from Romantic repertoire".'

'My students have great fun realising that they can play an octave or a tenth for the first time in their lives.' (*Erica Booker, Suzuki teacher trainer and private teacher, Sydney, Australia, 2010.*)

'I am a better pianist than I thought (those of you who know me will realize the gravitas of that statement). Many of my previous struggles were related to playing the wrong-sized keyboard. How ecstatic I am that I can play four-voiced chords at any range of the piano without performing gymnastic feats to align my torso, elbow et al at a precise angle in a millionth of a second (and this is just for Schubert, people!). Now I can simply focus on how I want it to *sound*.' (*Jess Johnson, Professor of Piano and Piano Pedagogy at the University of Madison-Wisconsin, <http://feelingthesound.org/2015/07/21/small-hands-big-heart/>*)

'At SMU, I studied and performed on a DS5.5™ built by Steinbuhler & Company that has a 5 1/2 inch octave as opposed to the conventional 6 1/2 inch octave. For me, the adjustment was instantaneous. I was amazed that my hands no longer felt small; for the first time, I felt like a big person at the piano. Coupled with this delightful surprise, there was also a painful realization that this is the confidence and physical comfort most people feel at the piano.' (*Thoughts for Pianists with Small Hands: A Testimonial by Grace Choi. <http://www.thehealthymusicianproject.com/blog>*)

'You need to allow yourself at least a couple of days with a DS keyboard to begin the journey of discovery of exactly what it is that you have been missing, and the unnecessary obstacles you have been facing all of your life. Trust me when I tell you that it is lot more profound than merely "stretching" a distance between any 2 digits.' (*email from Christopher Donison to Rhonda Boyle, 31 Dec 2006*)

'We have encountered many gifted students with small hands who have had to overcome great difficulties when playing standard-sized keyboards. Their special needs frequently are ignored, misunderstood or underestimated by teachers who have never had to personally grapple with issues of hand size.' (*Dr Lora Deahl, Texas Tech University, & Dr Brenda Wristen, University of Nebraska-Lincoln, Strategies for small-handed pianists. American Music Teacher, 52 (6), 2003. www.steinbuhler.com/html/our_story.html*)

'My teaching often betrays my small-handed bias. After all, I've spent literally thousands of hours practicing with small hands. This is what I know. So, my suggestions for my students reflect that. Being able to hop from keyboard to keyboard in my office has allowed me to experience passages that shed light on the impact of hand size on musical choices, body alignment, technical solutions, etc. *Every single teacher* with whom I have worked had large hands (able to play a 9th or more; edge a 10th). Most of the technical advice I received, while valid for someone with larger hands, had to be *translated* in order for it to work for me. Think about it....No size keyboard will make up for faulty ergonomics. There are basic principles of biomechanics that work for everyone.' (*Jess Johnson, Professor of Piano and Piano Pedagogy at the University of Madison-Wisconsin, <http://feelingthesound.org/2015/07/21/small-hands-big-heart/>*)

From academics, concert pianists and composers

'There are two great secrets in the world of piano playing. The first is how much easier the instrument is to play with larger hands and the second is how impossible it can be with smaller hands. If one can divide the world into roughly two constituencies; half with smaller hands and half with larger hands, one can see that the larger half never really knows what the difficulties of their smaller-handed counterparts are, and the smaller half never really finds out how diminished all the difficulties are with larger hands..... [The larger-handed pianists'] hands were already big enough long

before they were attempting repertoire that was challenging enough to betray the secret.' (*Christopher Donison, Executive Artistic Director, Music by the Sea, and co-inventor of DS keyboards, British Columbia, Canada. 'Hand size versus the standard piano keyboard.'* *Medical Problems of Performing Artists*, 15, 2000. <http://chrisdonison.com/keyboard.html>)

'Unfortunately, with the piano keyboard, a 'one size fits all' mentality has prevailed. Players having small-sized hands have historically been dedicated amateurs.' (*Dr Brenda Wristen, Associate Professor Piano Pedagogy and Keyboard Skills, University of Nebraska-Lincoln, Nebraska, USA, from Wristen, B., Jung, M.C., Wismer, A.K.G., & Hallbeck, M.S. Assessment of muscle activity and joint angles in small-handed pianists. Medical Problems of Performing Artists*, 21 (1) 2006. <http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1007&context=musicfacpubet>.)

'It is strange, that piano keyboard size has remained unchanged through the 20th century and most the latter part of the 19th, whilst earlier, the size of keyboards varied considerably for pianos and harpsichords. There is no justifiable reason for them always to be the same. Many female pianists, and many Asian pianists both male and female, have smaller hands than their Western colleagues. It is therefore reasonable that keyboards be made to suit the size of the performers' hands. One of the important things in my scientific teaching of piano performance is to stress the need to have tension only when and where needed, for the moment of impact. If we have to keep our hand opened out, in order to stretch for the distance between keys, we tend to have a permanent tension, which leads often to muscular problems. A smaller keyboard designed for the individual is very desirable to avoid ailments from undue tension.' (*Professor Max Cooke, OAM, Melbourne Australia, May 2013.*)

'...pianists with small hands need no longer be afraid of tackling repertoire with octaves and thick chordal textures. Thus we now have the chance to make hundreds of small handed players much more confident and virtuosic at the instrument. These implications are exciting, far reaching and could potentially lead to a sea change in pianism.' (*Murray McLachlan, Head of Keyboard, Chetham's School of Music, Manchester UK; Editorial, Piano Professional, EPTA UK, Spring 2010.*)

'The principle is one that seems so obvious and positive that I have never understood why it wasn't adopted generations ago. The fact is, most people cannot play all the repertoire they would like to. It's almost funny how many small-handed pianists come to me wanting to play Rachmaninov. More often, though, it's music of unremarkable technical demands that requires only a natural fall of the hand over a range of notes that is just that fraction too wide for comfort, leading to all the stress, insecurities and bad practices that are the bane of so many gifted colleagues' daily experience.' (*Ian Munro, concert pianist, teacher and composer, Australia, 2013.*)

'In a world of 7/8 stringed instruments, various-sized tennis rackets, baseball bats, rings, clothing, shoes, hats, prescription glasses, golf clubs and so on, surely we realise that one size does not fit all.'

'The technical approach on the smaller keyboard involves smaller, more refined movements and less use of throwing, pivoting, rotating and generally 'flying about'.

....I would suggest that the reduced-sized keyboard finally evens the playing field. Until now, the combination of small and delicately boned hands is seen only rarely in first class performing artists. Those at that level must possess truly extraordinary facility, flexibility and coordination to overcome difficulties.'

'The female hand is, on average, 15% smaller than the male hand. This statistic is very interesting when one realises that that translates to female hands being generally 7/8 the size of male hands....The conventional keyboard is designed to fit the average large hand. When playing the 7/8 keyboard, it is clear that I am replicating [my husband's] experience on the conventional keyboard.' (*Dr Carol Leone, Chair of Keyboard Studies, Meadows School of the Arts, Southern Methodist University, Dallas, Texas, 2003, p 29. 'Goldilocks had a choice.'* *American Music Teacher*, June-July 2004. <http://www.steinbuhler.com/GoldilocksFeature.pdf>)

'The three factors of hand width, finger length and finger abduction,, will explain a surprisingly large number of technical difficulties that are often wrongly attributed to defects of coordination or studentship....Fine dynamic gradation with the fingers in extreme stretches is physiologically impossible'. (*Otto Ortmann, 'The physiological mechanics of piano technique', London & New York, 1929.*)

'Hopefully all pianists would eventually agree that an ergonomic intervention to compensate for hand size is feasible and essential, just like adjusting the height of a piano bench to compensate for leg length and body height.' (*Dr Eri Yoshimura & Dr Kris Chesky, Texas Center for Music & Medicine, University of North Texas, Denton, Texas, USA. 'The application of an ergonomically modified keyboard to reduce piano-related pain.'* *MTNA e-Journal*, November 2009.)

'When jumping from one note to a distantly placed note, small-handed players should use their arms to find the notes and refrain from reaching with the fingers. This necessitates much practice purely for the sake of accuracy.' (*Dr. Brenda Wristen, Associate Professor Piano Pedagogy and Keyboard Skills, University of Nebraska-Lincoln, Nebraska, USA, and*

Lora Deahl, Associate Professor of Piano, Texas Tech University. 'Strategies for small-handed pianists.' *American Music Teacher*, 52 (6), 2003.)

'The ability to control the sounds at the piano, and this means producing lovely tone as well as finely-shaped phrases, depends to a large extent on the ease with which we can play'. (Max Cooke, *The Advanced Pianist's Tone, Touch & Technique*, Melbourne, 1985.)

'I realize now, looking back' that most of the time I spent practicing was used trying to overcome difficulties because of my hand-size....If you spend 90% of the time trying to overcome limitations imposed by hand size, then you are truly disadvantaged'. (Christopher Donison, Executive Artistic Director, *Music by the Sea*, and co-inventor of DS keyboards, British Columbia, Canada, 1998.)

'...the most challenging obstacle for embedding this idea into the piano world is the culture. Since the current keyboard size became the 'standard', anything outside 'normal' may be discriminated against....Another major concern regarding the culture is that pianists genetically fortunate to have been born with large physical traits might label the use of an ergonomically modified keyboard as 'cheating'. This perspective has been observed and should be considered irresponsible and unsympathetic. Perhaps representing the pinnacle of such perspectives, some small-handed pianists are considered 'less talented' because they struggle with a repertoire that requires playing larger chords or because they are no longer able to play due to pain...' (Dr Eri Yoshimura & Dr Kris Chesky, *Texas Center for Music & Medicine*, University of North Texas, Denton, Texas, USA, 2009.)

The September/October 2015 edition of *Clavier Companion* features an article: 'Size is Key' by Dr Carol Leone, Chair of Piano Studies and Associate Professor of Piano at SMU Meadows School of the Arts in Dallas, Texas. In his editorial, Pete Jutras says: 'I'm excited about the opportunities that smaller-sized keyboards present for our profession and for the musical world. I'm excited about the opportunities these keyboards create to help pianists play comfortably and avoid injury. I'm excited about the practice applications and the fact that these keyboards can help pianists direct more focus to tone and artistry'.