PASK: PIANISTS FOR ALTERNATIVELY SIZED KEYBOARDS

An international movement committed to choice in piano keyboard size

AN OPPORTUNITY FOR THE PIANO INDUSTRY

A recent study at the University of North Texas found that 75% of their piano students wished they had larger hands. ***Playing a keyboard with narrower keys effectively gives the pianist larger hands.***

The current piano keyboard was not designed to suit most pianists - it dates from the 1880s and suited certain famous European male virtuosos of the time. Before then, piano keyboards generally had narrower keys and different sizes were available.

How many pianists worldwide are not reaching their full musical potential due to a keyboard that is too big, so are not buying their own piano or upgrading their current one?

Recent research into pianists' hand spans shows that:-

- Over 50% of adults have hand spans that are too small for the conventional keyboard, assuming they want to play a wide range of repertoire.
- About 87% of women and 24% of men have hands that are too small for the current sized keyboard.
- Given a choice of keyboard, around 75% of adults would most likely choose a smaller size!
- Children are currently forced to learn on an instrument designed for men with large hands.

Many women and girls, as well as a sizeable proportion of men, are driven away from continuing with piano playing due to pain, injury or sheer frustration.

Dr Carol Leone[1] says: *'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.'*

A call for new keyboard standards – one size does not fit all!

Pianists want a choice of keyboard size. PASK recommends a move to the production of three standard sizes – the current keyboard with 6.5 inch (16.5 cm) octave, plus two smaller sizes with a 6.0 inch (15.2 cm) and a 5.5 inch (14.1 cm) octave[2]. These two new sizes, currently only available in a very limited way through small keyboard makers, represent a significant under-served market.

But wouldn't it be impossible for pianists to adapt to a different size?

On the contrary, many pianists are surprised to find that adapting to a different keyboard size is very quick. Performers can easily swap between different keyboards as needed, just as string and woodwind players often do!

The 'piano keyboard revolution' – keys to success

The move to three 'standard' piano keyboard sizes, with all three being presented as mainstream options, would be a revolution for piano production and pianists worldwide: a revolution which can transform the lives of millions of pianists, making piano playing and performance across a much wider range of repertoire accessible to far more than just the fortunate few blessed with having large hand spans. Essential components of a major initiative taken by any medium to large firm include:

1. Providing many opportunities for pianists to experience these keyboards, for example, in universities & schools, at conferences and in retail outlets.
2. Ensuring the inclusion of 'low cost' and 'entry level' options – digitals and/or upright acoustics.
3. Showcasing by well-known pianists in performance venues and on YouTube. Include men, women and children of different nationalities with a range of hand spans, not just focusing on those with very small hands.
4. Sponsoring competitions that provide keyboard choice.
5. Taking account of cultural barriers and prevailing myths (see p 3).
6. Taking advantage of the resources PASK can offer (see p. 4).

How many adult pianists would have hands that are 'too small' in a world with three standard keyboard sizes? The answer is: virtually no men and only about 10% of women! This does not even take children into account.

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[1] Dr Carol Leone is Chair of Keyboard Studies and Associate Professor at Southern Methodist University, Dallas, Texas.

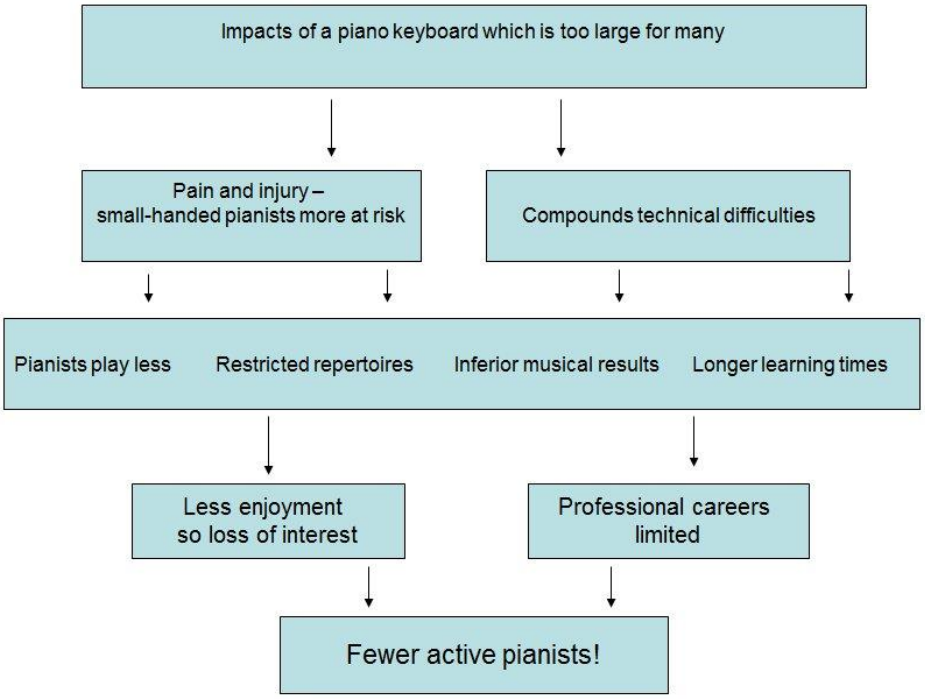
[2] The major manufacturer of these keyboards, Steinbuhler & Co from Pennsylvania, USA has adopted the names DS6.5®, DS6.0® (Universal keyboard) and DS5.5® (7/8 keyboard) for these sizes.

The evidence

The evidence that the 'one-size-fits-all' piano keyboard is too big for most pianists is overwhelming and comes from various perspectives:

- Performing arts medicine – small hand spans have been identified, in peer reviewed research, as a risk factor for playing-related pain or injury. Females are about 50% more likely to be affected than males, with some studies finding 70-80% of female pianists suffering from pain or injury at some stage during their lives.
- Analysis of new hand span data in relation to the demands of the piano repertoire.
- Accepted ergonomic and biomechanical principles in relation to piano playing.
- Gender differences in the results of major piano competitions and discography.
- Rapidly increasing anecdotal evidence from those who have played keyboards with narrower keys.

This diagram illustrates the flow-on effects of the mismatch between hand span and keyboard width for many pianists. The results include the early curtailment of promising careers due to injury, as well as loss of interest due to frustration with lack of progress.



What does the 'one-size-fits-all' large keyboard mean for a pianist whose hands are 'too small'?

- The increased risk of pain and injury, mainly from playing large chords and fast octave passages which put hands in a stressed positon.
- The more intensive practice needed to overcome the 'small hands' handicap can lead to hand deformities, bad technical habits and adds to the risk of injury.
- Hands which are fully stretched deliver less power and have less control over dynamic range.
- Repertoire choices are often severely limited.
- Fingering choices are often not optimal.
- Legato and voicing of chords are often compromised.
- Greater lateral hand shifts to reach figures not 'under the hand' such as broken and rolled chords, and the additional changes in hand position, all increase the mental effort required and divert attention away from the music itself.
- Career opportunities are curtailed and many pianists are unable to fulfil their musical potential.

Increased sales potential

A substantially increased market for piano and keyboard sales worldwide – both acoustic and digital – would be expected:

- Young pianists who continue playing rather than giving up in their teens, so parents would be more likely to upgrade.
- Pianists in their twenties who continue to play and purchase their own piano after leaving the family home.
- Adult pianists in general who continue playing and reach a higher level, so would be more likely to upgrade, and/or encourage their own children to learn.
- Older pianists, with hand spans contracting, will be more inclined to continue playing into old age.
- A revitalised interest in the community should lead to increased sales to schools, universities and other institutions, including additional pianos and keyboards in the smaller sizes.
- Additional keyboards in the smaller sizes being acquired for existing grand pianos in performance venues.

PASK regularly receives requests for digital pianos and keyboards with narrower keys. One factor sometimes mentioned is the potential to have a smaller instrument which can be more easily transported, or is better suited to confined spaces in apartments.

Why has this unmet demand not been expressed until recently?

As Chris Donison[3] explains: *'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.'*

The revolution has already started – initiated through the Donison-Steinbuhler invention and creation of the DS standards for alternatively sized keyboards. Steinbuhler & Co. has continued to get his acoustic keyboards out into the community, including in 10 universities in the USA. DS keyboards are now available to contestants in an international piano competition in Dallas.[4] This has led to more and more people trying them and finding the experience to be a revelation. The internet, allowing pianists to share these experiences, is perhaps the main reason why the pressure for change to piano keyboard size did not arise for over a century.

Barriers to change

PASK founders and supporters have learnt much from discussions with pianists, teachers, researchers and piano industry representatives in recent years. The barriers to the 'piano keyboard revolution' are largely cultural rather than technological. It will be critical for any firm to understand these barriers when developing a strategy to introduce alternatively sized keyboards:

- The significant stigma among pianists associated with having 'small hands'. This is understandable given the lack of choice for over a century; any pianist wanting to perform has to prove themselves on the 'large' keyboard or risk their future careers. As a result, many put up with pain and injury in silence.
- Prevailing myths that do not stand up to scrutiny. The most widespread is the assumed difficulty or impossibility of adapting to a different size, and in swapping between sizes. Virtually all pianists alive today have never lived in a world where there were alternative sizes, so do not realise that they are indeed flexible, just as string and woodwind players are.
- Other myths not backed up by evidence include: alternative sizes would 'ruin one's technique', or more cruelly, that good technique or 'special tricks' can overcome any hand span issues. This instils a belief in a student that their difficulties relate to lack of practice or talent. Famous pianists of the past may be referred to as having 'small hands' when in fact their actual span may be unknown or may have been quite large for their gender and above the small-versus-large hands benchmark of 8.5 inches (e.g. Alicia de Larrocha).
- Lack of experience with an alternative size means that most pianists do not realise the profound and far-reaching benefits of a keyboard that better matches their hand span.
- Pianists today often avoid playing or even trying an alternative size as they lack belief in a future which is different from the present. Hence the smaller sizes need to be seen as mainstream, not just a 'niche market' or 'special order' option.
- See also: http://www.paskpiano.org/barriers-to-change.html

How can three sizes work in practice?

- Performance venues – interchangeable keyboards would be available for concert instruments. This has proven to be a practical solution in the first international piano competition (in Dallas, Texas) to offer the choice.
- Universities and schools – a mix of sizes in different pianos would be available. Many existing pianos could be retrofitted.
- Private studios – many teachers have more than one piano now, so having at least two sizes would not be unreasonable.
- In the home – children would ideally start with the smallest size (digital or upright) then perhaps scale up if needed. Most girls would not need to scale up from the DS5.5®. If different family members play, the DS6.0® may be the best size.
- Pianists will often come across the three sizes during their lives so will be used to playing a different size when needed.
- For further suggestions, see: http://www.paskpiano.org/vision-for-the-future.html

The persistence of the piano world to stick with one keyboard size starkly contrasts with the sporting world, where the need for equipment or clothing to suit the individual becomes most critical at elite levels. It is taken for granted that skis, tennis racquets or shoes must fit the individual, and this includes those winter sports which combine artistry with technical skills.

Marketing messages

- Given the current 'small hands' stigma, we need to miminise reference to 'small hands'. As shown above, the vast majority of adult women (Caucasian as well as Asian), plus a sizeable proportion of men, have 'small hands' in relation to playing the current keyboard. Likewise, although the smaller sizes are ideal for small children and those who have suffered an injury, these are by no means the only markets.
- We have found it best to refer to the three 'standards' according to octave size, rather than fractions of the whole (e.g. 7/8) which can imply something that is 'not the complete instrument' and may have an inferior sound.
- Terms like 'reduced size' and 'smaller' keyboards can be confusing – do they mean fewer keys? The term commonly used by academics, ESPKs (ergonomically scaled piano keyboards) while accurate, is unlikely to be suited to mass marketing.
- Focus on choosing the 'right' keyboard for your hand size, just like choosing a pair of shoes or skis.
- The 'right size' or 'best size' will make piano playing so much easier, more comfortable and therefore more enjoyable.
- They will help millions of pianists learn faster, reach their full musical potential and play the repertoire currently denied to them. How many pianists today are able to tackle Rachmaninoff, Liszt or Vine successfully? Or Schumann's Toccata?
- Piano keyboards with narrower keys effectively give pianists 'larger hands', something most pianists wish for!
- PASK finds that personal stories often have the greatest impact. See the separate PASK document: 'Quotes'.

[3] Christopher Donison, co-inventor of DS keyboards, is a composer and pianist living in British Columbia, Canada
[4] http://www.dallasipc.org/

The way forward

The September/October 2015 edition of *Clavier Companion* features an article: 'Size is Key' by Dr Carol Leone[5]. 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'.*

Following the lead by Steinbuhler & Co., other small piano manufacturers and keyboard makers are starting to take an interest. This should result in greater numbers of alternatively sized keyboards in the community in the near future, meaning more opportunities for pianists to experience the difference and thus increasing pressure on the larger firms. The new TASK (Technicians for Alternatively Sized Keyboards) network will make the options clearer for customers everywhere. The TASK Facebook group for those interested in the technology is already proving to be a great forum for sharing ideas. (facebook.com//groups/TASKPiano/)

As shown by Kawai with its recent GM12 'small key' model sold via its Australian office, the 6.0 inch octave keyboard presents no special technical challenge. The 5.5 inch octave size requires extra bracing under its outer keys. Steinbuhler & Co. no longer holds any patents relating to keyboard manufacturing.

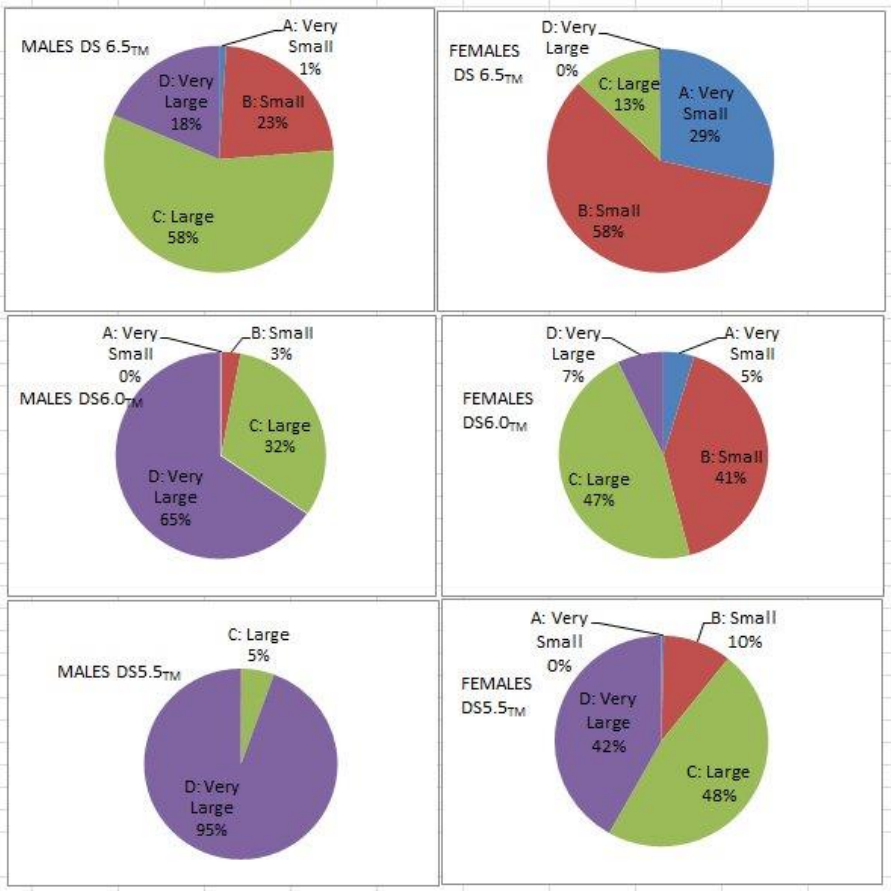
Depending on which of the larger firms takes the lead in future, their strategy is likely to depend on their mix of products (acoustic vs digital), their existing markets around the world, specific opportunities to use company 'artists', and opportunities to sponsor various high profile competitions.

Alternative sizes and nomenclature

- To avoid confusion in the market place, it makes sense to stick to the two main additional sizes currently made by Steinbuhler (DS6.0® and DS5.5®). Trials by David Steinbuhler, involving pianists with different hand spans and different keyboard sizes, plus considerable evidence from teachers and pianists, support the need for both sizes.
- The DS6.0® is liked by many immediately given the instantaneous adjustment to this size. It suits a very wide range of pianists, including many men. It has the potential to be the most popular size in the future and should perhaps be a major focus by a company in the early stages of roll-out.
- Hand span research shows that the DS5.5® (with an octave size equivalent to a seventh on the conventional keyboard) is essential to 'level the playing field' between men and women. Many women, particularly those of Asian ethnicity, find that the DS6.0® is still way too big. Although the adaptation time is slightly longer for the DS5.5®, it is normally no more than one hour.
- Use of the trademarked DS names is an option for piano manufacturers and keyboard makers.

Alternatively sized keyboards can effectively make the 'small hands' problem disappear!

These pie charts show the proportions of adult males and females in each of the four hand span zones, based on the hand span data and definition of 'small hands' summarised on the following page. They show that the DS6.0® essentially solves the problem for men, and that the DS5.5® is needed for women to benefit to a similar extent.



How PASK can help

- Support via Facebook (PASK and Steinbuhler pages) and website hits is growing strongly.
- PASK is neutral in relation to different keyboard/piano firms and will continue to promote any initiatives involving narrower keys – digital or acoustic, or hybrid.
- PASK supporters are a resource for the industry, for example by:
  - Recommending speakers at industry-sponsored teacher conferences and seminars.
  - Recommending high profile pianists for public performances.
  - Lobbying for alternatively size keyboards in a local school or university, or for a piano competition.
- PASK will seek to direct donations to prize money for any piano competition that offers keyboard choice, and to assist institutions that are committed to keyboard acquisition.

Links for further information
www.paskpiano.org
www.smallpianokeyboards.org
www.taskpiano.org
www.steinbuhler.com
Facebook:
facebook.com/pask.piano,
facebook.com/task.piano
facebook.com/dskeyboards

[5] Chair of Piano Studies and Associate Professor of Piano at SMU Meadows School of the Arts in Dallas, Texas.

RESULTS OF RECENT HAND SPAN RESEARCH AND DEFINING 'SMALL HANDS'

The following research has been presented to two major conferences in 2015: the Australasian Piano Pedagogy Conference held in Melbourne, Australia, and the National Conference on Keyboard Pedagogy in Chicago, USA. The full paper was published online in December 2015: Boyle, R., Boyle, R. & Booker, E. (2015). Pianist Hand Spans: Gender and Ethnic Differences and Implications for Piano Playing, *Australasian Piano Pedagogy Conference, Beyond the Black and White,* Melbourne, July 2015. (www.appca.com.au/2015proceedings.php). For a summary of key results see: http://www.smallpianokeyboards.org/hand-span-data.html and http://www.smallpianokeyboards.org/how-many-pianists-have-small-hands.html

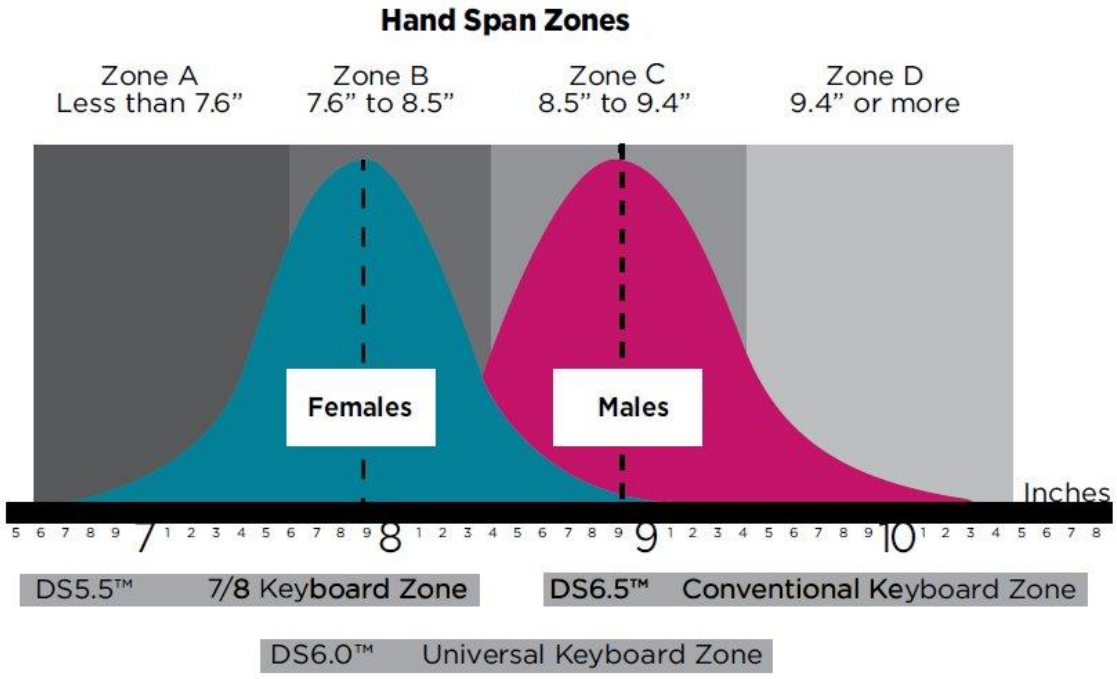
Data from 473 adult pianists were collected and analysed. The ratio of Caucasians to Asians in the sample was approximately 2:1. Data was also collected from a small group of young piano students (under the age of 18) and university business students (non-pianists) for comparative purposes. Some key findings include:

- Hand span measurements follow a normal distribution, with separate distributions for males and females being obvious.
- Adult males have a significantly larger span (thumb to 5th finger) than adult females. **On average, the gender difference is 1 inch (2.5 cm) – more than the width of one white key!**
- Caucasian spans (for each gender) are about one quarter of an inch (0.6 cm) larger than Asian spans.
- Esteemed international soloists who perform a wide range of repertoire tend to have larger spans than others. They tend to have at least an 'average male' span of 8.9 inches (22.6 cm) and often much larger.
- A significant proportion of women (around 30%) have spans similar to those of young children.
- Non-pianists tend to have smaller hand spans than pianists, with self-selection likely to be a contributing factor.
- Results are consistent with previous studies.

Defining a 'small hand' in relation to the conventional keyboard:

- Assumes a desire to play across a wide range of piano repertoire
- A thumb to fifth finger span of less than 8.5 inches (21.6 cm) has been defined as 'small' (see zones A & B below), based on the ability to perform fast passages of octaves and large chords with power and ease but without tension, and <u>just</u> play a tenth on the edge of the keyboard.

The chart below illustrates the hand span distributions of adult males and females and the bars underneath show the hand span ranges most suited to each keyboard size.



- As shown in the pie charts on the previous page, about 87% of adult females and 24% of adult males have hand spans that are 'too small' when playing the conventional keyboard. Nearly 30% of women are in the 'very small' zone!
- Nearly all children – at least at some stage in their lives - would also fall within the 'small' and 'very small' ranges.
- There is strong anecdotal evidence that even those with spans of 9 inches and slightly above (here classified as 'large') also prefer a smaller keyboard – most commonly the 6 inch octave size (DS6.0®). While the choice will depend to a large extent on the repertoire a pianist wishes to play, most pianists would like to be able to reach a 10th comfortably and play fast octaves and large chords without tension.
- Larger hand spans are important not just for classical repertoire, but also jazz and rock (ability to play 10ths, power and stamina).
- The ability to stretch a particular interval does not fully convey the profound impacts of a mismatch between hand span and keyboard size: *'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!"' ((Mr) Daisuke Sakai, November 2014, owner of DS5.5® keyboard.)*