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The Importance of the *Tangentenflügel* to the Development of the German Piano

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The earliest datable example of the *Tangentenflügel* can be set at 1770. This is the instrument in the Württembergisches Landesmuseum, Stuttgart. Dendrochronological analysis of the wrestplank veneer showed this to have been felled in 1767 and to have come from the Bohemian Forest. Thus such instruments precede all extant German grand pianos except the Silbermann.

Basic construction and design elements can be found in later pianos, both of Stein and his followers and of Walter. These include the basic scale, at least for Stein and his followers, the bent bridge, the ladder, also called post construction bentside liner, and the thin, applied visible bentside to name only the most obvious.

In particular, the ladder interior bentside is found on virtually all German grand pianos until Stein – if it indeed was he – introduced the A-frame around 1780.[1] Prior to this, he used, like David Schiedmayer, a ladder bentside. Walter used the ladder or post bentside until about 1800. There is at least one harpsichord, however, with the same bentside construction: the unsigned harpsichord in the Blumenstein Museum in Solothurn.[2] This unrestored instrument was probably built by the organbuilder Alexander Speissegger in 1760 for the Music-Academy in Neuchâtel.[3]

It is generally said that German instruments are basically Italianate, and this is certainly true of the Silbermann pianos – and the Mietke harpsichords – with their knees inside. Most Italians have knees inside. But not all; there are several with vertical spacers between bottom and bentside liner and no knees. This is of course the same basic idea as the ladder bentside: the spacers keep the liner parallel to the bottom, and also keep the liner from tipping towards the inside

1 For sketches of the different internal structures used by Stein see Michael Latcham, *The Stringing, Scaling, and Pitch of Hammerflügel built in the Southern German and Viennese Traditions 1780–1820* (Munich and Salzburg, 2000), vol. 1, p. 14. The ed.

2 Now in the Musée d'Art et d'Histoire, Neuchâtel. The ed.

3 Georg F. Senn, "Restaurierung eines historischen Cembalos – was tun?", *Mitteilungsblatt des Verbandes der Museen der Schweiz VMS/AMS* (June 1984, No. 32). A photo of this case construction and sketches of some more harpsichords with the same post construction bentside liner are reproduced in Alfons Huber, "Baumerkmale österreichischer Kielklaviere des 16. bis 18. Jahrhunderts", in *Das österreichische Cembalo*, ed. Alfons Huber, Tutzing 2001, pp. 115–226, especially pp. 142–145. The ed.

and down. Such instruments invariably have cross-ribbing, and these ribs serve foremost to keep the sides apart. The harpsichord attributed to Speissegger has cross-ribbing. An alternative is the sloping brace, and the *Tangentenflügel* has sloping braces. This basic case remains in use until at least 1800. Both Walter and Schiedmayer used it inspite of their otherwise very dissimilar designs.

The earliest *Tangentenflügel* has kneelever damper lift, a moderator, and a harp stop. Like Cristofori's pianos it has leather-covered wedge dampers that run between the strings of the choirs in the bass half, while it has flat soft leather pad dampers to the right of the choirs in the treble, and the treble half can be lifted by a hand stop as well. This setup of wedge in the bass and pad in the treble has the advantage of undampening the treble first when the kneelever is used, not unlike half-pedal used today on modern pianos. The moderator serves to "leather" the tangents as it were; to change hammers while playing the dulcimer or Pantalon. The moderator is of thin wool cloth in this case, but Schiedmayer mentions yellow leather in his workshop book. The harp stop, also found on many early squares, serves to dampen the higher partials without actually deadening the string. It is in the form of a very soft woolen or silken brush. It has a shift or *una corda* lever at the lower left above the keys for tuning like Cristofori has. After removing the stopblock on the tangent guide, the guide can be shifted all the way to the left to remove the tangents when necessary. The keyboard cannot be removed until both dampers and tangents have been removed.

Tangentenflügel were made predominantly by Franz Jakob Späth and Christoph Friedrich Schmahl and their sons of Regensburg from about 1770 until at least 1810. Schmahl was the grandson of the organbuilder Michael Schmahl of Heilbronn. Another grandson of Michael, Johann Matthäus in Ulm, also made Tangentenflügel. The Munich example is his. He is most famous for his harp shaped "square" pianos of which several are extant.

What can be seen is that most of the later pianos incorporate most of the design elements of the early *Tangentenflügel* except the action proper. The early, long model *Tangentenflügel* was a sort of "harpsichord with soft and loud." Both scaling and ribbing go for a center-of-the-keyboard bias with a very clean bass.

As the piano proper developed, Späth and Schmahl developed a second model Tangentenflügel, a sort of anti-piano aimed specifically at the piano market. This is the so-called short model. Most of the extant examples, and the only original in real playing condition to my knowledge are of this model. Ribbing, scaling, and bracing are changed. The scale is elongated in the treble, but much foreshortened in the bass. Bottom choirs are strung 8'+4' and the 8' is wrapped. More kneelevers have been added; first for the moderator, and the very late ones also have a kneelever for the *una corda*. One can see the change in usage of the *una corda* despite Broadwood's contemporary directions for

tuning which specifically use the *una corda* for setting the temperament. The changes make for a stronger, clearer treble, easily able to hold its own against the rest of the compass. In fact the treble of the 1797 original in private hands in London is so good that most contemporary pianos pale before it. Tonally, these short model instruments are very successful. The drawbacks of the action remain, of course.

My own suspicion is that *Tangentenflügel* were used mostly with moderator, and in this state "schebern" – rattle or blocking – is not a serious problem at all. We have some evidence for this in the moderators Schiedmayer made. These are always on; the kneelever takes them off, it must be held up all the time to play without the moderator. On instruments with hand stop moderators, the position is ambiguous. Which position is on? Which off? Schiedmayer's setup thus is a very important pointer, in particular as his workshop book calls for leather for the moderator.

The tangents were not leathered. This comes as no suprise: there are many unleathered squares, and the 1777 Stein *vis-à-vis* is unleathered as well. In this light, having the moderator always on obtains a new light. And what is presently preferred as piano tone, together with modern leathering practice, must be reviewed. When I releathered my Schiedmayer replica, I used it for a while unleathered, and found it entirely convincing. I tried very thin leather, and eventually releathered it with much thinner leather than before. The original has, like many other contemporary instruments, white organbuilder's leather which is now very hard indeed. Obviously there is no guarantee that this leather is original or, indeed, that there was any leather at all.

Mozart's famous letter to his father, written at Augsburg shortly after the 17th October 1777, shows many things:[4]

> Mon trés cher Pére,
> Nun muss ich gleich bei die steinischen Piano forte anfangen. Ehe ich noch vom stein seiner arbeit etwas gesehen habe, waren mir die spättischen Clavier die liebsten; Nun muss ich aber den steinischen den vorzug lassen; denn sie dämpfen noch viell besser, als die Regensburger. wenn ich starck anschlage, ich mag den finger liegen lassen, oder aufheben, so ist halt der ton in dem augenblick vorbey, da ich ihn hören liess. ich mag an die Claves kommen wie ich will, so wird der ton immer gleich seyn. er wird nicht schebern, er wird nicht stärcker, nicht schwächer gehen, oder gar ausbleiben; mit einem wort, es ist alles gleich. es ist wahr, er giebt so ein Piano forte nicht unter 300 fl: aber seine Mühe und Fleiss die er anwendet, ist nicht zu bezahlen. seine instrumente haben besonders das vor anderen eigen, daß sie mit auslösung gemacht sind. Da giebt sich der hunderste nicht damit ab. aber ohne auslösung ist es halt nicht möglich daß ein Piano forte nicht schebere oder nachklinge; seine hämmerl, wen man die Claves anspielt, fallen, in den augenblick, da

4 Cited after *Wolfgang Amadeus Mozart – Briefwechsel und Aufzeichnungen*, ed. Hedwig and E.H. Mueller von Asow, vol. II, Lindau 1949, p. 94/95. The ed.

> sie an die saiten hinauf springen, wieder herab, man mag den Claves liegen lassen oder auslassen ... Er steht gut davor daß der Raisonance-boden nicht bricht, und nicht springt. wenn er einen raisonance-boden zu einem Clavier fertig hat, so stellt er ihn in die luft, Regen, schnee, sonnehize, und allen Teufel, damit er zerspringt, und dann legt er span ein, und leimt sie hinein, damit er recht starck und fest wird. er ist völlig froh wenn er springt; man ist halt hernach versichert daß ihm nichts mehr geschieht. er schneidet gar oft selbst hinein, und leimmt ihn wieder zu, und befestiget ihn recht ...

First, it shows that Mozart was familiar with the *Tangentenflügel* and that he in fact preferred them, at least until he had played a Stein with escapement. He is fascinated with the escapement. Nowhere does he mention the sound as such. And why should he? Judging by the extant Stein of 1777, the hammers were not leathered. Stein's scaling is almost identical to that Tangentenflügel's and at this time, Stein had not yet introduced the A-frame. The sound was almost the same; any difference was due to the detail preferences of the different shops, not to the hammers. No, Mozart was only interested in the escapement, in being able to play with abandon – and get away with it. Curious that we today have a similar phenomenon in the check/no check debate, albeit at a higher level of abandon as it were.

There is something more difficult to interpret: Mozart speaks about the dampers and how well they work. Stein and his followers do have wedge dampers all the way up save on those few instruments with triple stringing at the top. Wedge dampers are more immediate, but the experience both with the 1797 original and the copy of the 1770 show that damping is not an issue. Is Mozart talking about squares, and if so, which ones? Damping on squares is always ephemeral, and when the case of the instrument starts to twist, more so. But that the Stein in question was a grand seems undebatable, given the 300fl price quoted. One would assume that Mozart had enough knowledge of instruments to differentiate, but the last passage about how Stein put his soundboards out in the weather to crack and tear so he could fix them again shows that Stein at least did not think too highly of Mozart's technical knowledge. This is a classic example of hoodwinking such as abounds craftsman shops, and are aimed at the unsuspecting and naive. No one is or was exempted, and it is and was considered great fun.

Thus, the passage about the damping must be taken with a grain of salt: the passage about the snowed-on soundboards with a good laugh. But the passage about the escapement action is terminally accurate at least, and also shows the only difference between the Stein and the *Tangentenflügel* at the time. The *Tangentenflügel* was considered to be as much a 'piano' as any other.

Consideration of the Stein action is appropriate here. Stein's – if it is indeed his – action is nothing other than an inverted Cristofori action as shown in the Maffei sketch[5]. Cristofori's action has nothing whatever to do with any

later piano action save the Stein/German and its derivatives and those direct descendents of the Cristofori action as made by Gröger, Haug, Walter, etc. and patented by Baptist Streicher around 1840. Cristofori's action releases by geometrical necessity through the intersecting arcs described by the lever and the hammer. Whether or not the hammer butt is raised or the beak pulled down is immaterial. Escapement must happen for geometric reasons. Within reasonable limits, spring tension makes no difference, and a new action will function dependably without the pawl spring as long as the parchment hinge is still stiff. By comparison, all other actions release by mechanical necessity. A cam or other crank with an adjustable stop forces the jack to disengage regardless of where the hammer is. The arc described by the hammer is immaterial.

The *Tangentenflügel* was not peripheral. The comparison to his contemporary Stein, and the comments Mozart made, show this clearly. The fact that such an instrument could still be sold in 1810 does as well; that this instrument was used into the 20th century likewise.

So what influence did the *Tangentenflügel* have on the contemporary pianos? In southern Germany, a profound one. I have tried to show that basically every aspect was based on or outright copied from the Tangentenflügel. Except the hammer action of course. More recent research has shown that by no means all early pianos had an A-frame or massive cross-bracing. These various designs coexisted until into the 19th century.

Let me cite from a lecture[6] given in 1989:

> Quite different from the above is what I will call, for lack of a better term, south-German. It is found in the instruments of Späth & Schmahl, Johann David Schiedmayer and in the five octave Louis Dulcken's. These have a true bentside, though not necessarily bent. They are made up of sawn curves along the bottom edge and forming the liner and joined by spacers. These spacers are horizontal blocks in Schiedmayer's. Späth & Schmahl's have vertical pieces mortised into the curves, a feature Walter will later borrow. The full-depth braces are perpendicular to the spine and diagonal bracing is usually afforded by struts, although Dulcken also has those curious dowels connecting the bellyrail to the bentside. There is no A-frame, even in the 1794 Schiedmayer.
>
> Different – or similar – to both is what I will call the "Augsburg school". The most obvious feature is the A-frame. In this respect, it is interesting to note that the 17th cent. south-German harpsichord at the Courtauld Institute in London[7] has

5 See the article of Kerstin Schwarz, this volume p. 35. The ed.

6 William Jurgenson, "The Structure of the Classical Piano", paper read at the 1989 'Antwerpiano' meeting; not yet published. The ed.

7 See also Christopher Nobbs, "An anonymous seventeenth-century Harpsichord in the Courtauld Institute Galleries, London", in *Das österreichische Cembalo*, ed. Alfons Huber, Tutzing 2001, pp. 323–327. The ed.

an A-frame from tail to bellyrail and that the full-depth braces jump over this to carry the liner, but neither these nor the A-frame touch the bentside itself. Another somewhat later instrument, the 1702 Antonio Migliai at Leipzig, has a board shaped like a bootjack between the bellyrail and the first knee on the bentside, very similar to the Cristofori pianos – an embryonic A-frame?
The "Augsburger" instruments have a true A-frame, but here it is the basis of the bentside itself – a very different approach to that of Cristofori or the Courtauld instrument. They have no true bentside. Nonetheless, it would appear that Stein was well aware of Cristofori's work. It is easy to think of Cristofori's sucession of spacers tangent to the bentside as a single piece.

Early Steins do not have the A-frame either, they are built like the Tangentenflügel. By around 1810–15, Lorenz Schiedmayer had reverted to a true bentside case without an A-frame, albeit not with a ladder bentside but with a laminated one. Nonetheless, the bracing is quite close to the Tangentenflügel. For my part, I am quite sure the A-frame in the German/Viennese piano was a simple way to make the case, and not the ingenious structure it was in the Courtauld, Cristofori, and Migliai.

Compared with what we know of the Silbermann and Cristofori pianos, the *Tangentenflügel* were very much a step toward *Sturm und Drang*, both very fast and explosively dynamic. There are practically no grand pianos contemporary to the first Tangentenflügel. In this light, their aggressiveness must definitely have been an incentive to make grand pianos of equal musical quality, fitting the changing taste. We know nothing of the earliest Walters since they have all lost at least their original actions. Likewise, none of the early Steins save the *vis-à-vis*, which has been restored, are really playable. The first I consider playable is the 1783 phase III in Stuttgart[8]. Various sources have it at various dates between 1778 and 1788, but it is dated 1783 in handwriting on the underside of the soundboard. This instrument is very playable indeed, and it is fast and explosive like the Tangentenflügel, perhaps even more so.

What influence did the *Tangentenflügel* have on the piano musically? In the end, I don't think this a legitimate question. I hope I have shown that in its lifetime, the *Tangentenflügel* was considered a *Flügel* just as the grand piano was. It hit the strings, played loud and soft, had *Veränderungen* such as the moderator, and importantly, a kneelever for the dampers even on the earliest extant example built at the latest in 1770. Not only that, this was set up to lift the treble dampers first just like a modern grand is. This care was not taken for nothing and it should tell us a little something about the use of the pedal at a time where pedalling is normally not notated. Arguments that pedalling was not done, or only scarcely don't seem to make much sense against such a

8 Württembergisches Landesmuseum, Inv. No. G 4185. Michael Latcham dates this instrument as 1788. For this and Stein's different phases, see Michael Latcham, 'Mozart and the pianos of Johann Andreas Stein', *The Galpin Society Journal*, LI, July 1998, 114–153. The ed.

background. What else? It is very fast, and very explosive, even loud. It can cut through an ensemble. What should this suggest about present-day taste in fortepiano sound and leathering? It tells me that we as a group are way way off base, and that the veritable armada of Walter MINe 109 clones is almost as far from reality as the modern Steinway is. At least as far as Mozart and his contemporaries are concerned.

Perhaps the question should now be: What influence should the *Tangentenflügel* have on today's early music movement?

Literaturhinweise

Heinrich Herrmann, *Die Regensburger Klavierbauer Späth und Schmahl und ihr Tangentenflügel*, Erlangen 1927.

Michael Latcham, "Franz Jakob Spath and the *Tangentenflügel*, an eighteenth-century tradition", in *The Galpin Society Journal,* LVII, 2004.

Mechanikskizze

Wir geben im folgenden eine Skizze der Mechanik eines Tangentenflügels. Sie ist aus den Abbildungen 14 (Tangentenflügelmechanik Späth und Schmahl) und 15 (Tangent des Schmahlschen Flügels in München) von Heinrich Herrmanns Dissertation montiert.