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Three Grand Pianos
in the Florentine Tradition

John Koster

In 1700 the inventory of musical instruments belonging to Prince Ferdinando de' Medici included an « Arpicembalo [...] di nuova inventione, che fa' il piano, e il forte » by the Florentine harpsichord maker Bartolomeo Cristofori. Arguably, no new invention in the history of music has had a greater or more lasting influence. Within a few decades of its appearance, Cristofori’s invention, the piano, was known and imitated throughout most of Europe.

The complex paths that Cristofori’s influence followed, as well as the persistence throughout the eighteenth century of specific details of Cristofori’s design, are well illustrated by three instruments in American collections. Dissemination of the invention to the Iberian peninsula is represented by a grand piano by Manuel Antunes, Lisbon, 1767. An instrument by Louis Bas, Villeneuve lès Avignon, 1781, however, evidently belongs to another line of development: Cristofori’s work was imitated by Gottfried Silbermann in Freiberg (Saxony) in the 1740s. Piano making subsequently entered France through the work of his nephew, Johann Heinrich Silbermann of Strasbourg. The third instrument, by Vincenzo Sodi, Florence, 1789 (unfortunately preserved only as a fragment), shows a branch of this second line of development returning to the city of its origin. The Sodi piano was clearly inspired, directly or indirectly, by the instruments made by Johann Andreas Stein in Augsburg in the 1780s. This German maker’s work was well known in Italy, where, for example, by 1782 instruments by him had been purchased by the Grand Duke of Tuscany and the Queen of Naples. Although Stein’s piano making was derived from that of the Silbermanns, with whom he worked as a journeyman in Strasbourg, he thoroughly reconceived the instrument’s design. Thus, while the Antunes and Bas pianos were made with actions more or less identical, in principal, to those in Cristofori’s pianos of the 1720s and they retain such Cristoforian features as the inverted wrest plank (Bas) and the wide,

1. I thank John Henry van der Meer, Michael Latcham, and John A. Rice for their helpful comments upon reading a draft of this article.
4. See John A. Rice, « Stein’s ‘Favorite Instrument’ : A Vis-à-vis Piano Harpsichord in Naples », Journal of the American Musical Instrument Society, vol. 21, 1995, p. 31. Michael Latcham has suggested to me that the trichord stringing in the treble of the Sodi piano was copied from a Stein piano made during his « Phase II », that is, from about 1778 (certainly by 1781) to 1783.
2. Antunes piano: inscription on the $d^2$ key lever.

undercut hitch-pin rail (Antunes), the Stein-like Sodi piano, although made in Florence, lacks such overt features of the early Florentine piano. Only in certain details of its internal construction does the Sodi piano appear to stand directly within—or, rather, at the very end of—the Florentine tradition of stringed keyboard instrument making.

The following technical descriptions and comments are intended to introduce these three unique instruments to a wider audience.

All measurements are in millimeters. Measurements of string lengths are of the longer string of each pair. Measurements of the case dimensions exclude lids and moldings. "Front" refers to the side of the instrument with the keyboard. Woods that have been identified by microscopic examination are indicated with an asterisk (*). Latin botanical names are given at the first occurrence of each taxon. In the plan drawings, pieces glued to the soundboard (e.g., liners and ribs) are shown in solid lines, while other pieces under the soundboard but not attached to it (e.g., frame members) are shown in broken lines. Bridge and nut pins are indicated for all the C strings and for the lowest and highest notes of the compass.

3. Antunes piano: elevation of the action at $c^1$. 

J. Koster del.
GRAND PIANO (fig. 1)
Manuel Antunes, Lisbon, 1767.

COLLECTION
The Shrine to Music Museum, Vermillion, South Dakota; Rawlins Fund, 1990 (cat. no. 5055).

PROVENANCE
Purchased at auction, Sotheby’s, London, 22 November 1990. According to papers received with the instrument, the piano was given to « Maria Rachel Carvalho Monteiro by her grandfather […] and […] she herself had given [it] to her children Maria Luisa and António Manuel » along with similarly decorated furniture dating from the eighteenth century to 1950. The instrument is presumably the one mentioned in 1900 by Ernesto Vieira as belonging to Ernesto Victor Wagner (The auction catalogue erroneously suggests that Wagner was the original eighteenth-century owner).

PRINCIPAL REFERENCES

Stewart Pollens, The Early Pianoforte, Cambridge, Cambridge University Press, 1995, pp. 137-156. The instrument is heard in a recording of sonatas by Ludovico Giustini (1732) performed by...
Cremilde Rosado Fernandes, compact disk Numérica, NUM 1047 (released in 1996), with booklet text by Gerhard DODERER and John KOSTER.

DESCRIPTION

Inscription : in ink on the $d^3$ key lever (fig. 2):

1767 Antunes

Principal Dimensions (excluding the brackets at the front of the spine and cheek piece) : length 2267 ; width 824 (measured at the top of the case, over the front of the wrist plank) ; height 223.

Keyboard and Action (fig. 3 & 4) : the compass is C to $d^3$ (51 notes) ; key levers of spruce* (*Picea) ; naturals covered with boxwood (*Buxus sempervirens), fronts with boxwood arcades, heads 40 long ; sharps of a dense, dark reddish-brown tropical hardwood (unidentified, but not rosewood [*Dialbergia]), covered with ebony (*Dioptera), 84 long, height above natural surfaces 8 ; three-octave measure 490. The keys, which are guided by pins moving in a slotted rack at the rear, are stopped by the cloth-covered underside of the intermediate-lever hinge rail and by the cloth-covered front rail of the key frame. The balance rail is of oak (*Quercus*).

The action is of the Cristofori type, with several differences in detail. The walnut (*Juglans regia*) escapement jack (fig. 4 b), resembling a harpsichord jack tongue widened at the top to form a T, is mounted in a walnut holder attached to the key lever with a brass wire stem passing through a thin brass plate set into the lever. The jack pivots on an axle pin and is returned to its rest position by a brass leaf spring at the front. The backward motion of the lower end of the jack is limited by a block attached to the back of the holder, and the impact of the returning jack is softened by a layer of leather at the bottom of the slot in the holder.

The intermediate levers and hammers are held by a separate action frame which is held in position on top of the key frame by hardwood pins housed in mortices in the side rails of the key frame and is secured by a hook at each side. The intermediate levers, of spruce, with leather-garnished walnut blocks on their undersides, against which the escapement jacks bear, are hinged with leather glued and sewn to the back rail of the action frame. The tips of the levers are garnished with leather where they bear against the hammer butts. The hammers are divided into five groups of ten or eleven, divided between $\Lambda / A^\#$, $g / g^\#$, $f^1 / f^1\#$, and $d^2 / e^2$, with the five groups of hammer butts arranged in a stepwise manner, so that the separate axle wire (brass, 1.65 in diameter) for each group can be removed individually. The hammer butts are of cypress* (*Cupressus, perhaps C. lusitanica), 7 thick, separated by dividers of the same wood. Each axle hole is countersunk on the appropriate side to guide the axle wire as it is inserted ; there is a cork bushing on the opposite side. Each hammer butt is provided with a lead weight, 6 in diameter. The hammer shanks are of spruce*, 4.1 in diameter, with the rings of the end grain set approximately 30 degrees from the vertical but with considerable variation from shank to shank. The hammerhead stems consist of upright slips of walnut*, 2.1 thick and, on the average, about 10.8 wide on top. They are reinforced on each side by walnut buttons around the joint with the shank, and widened on top by wedges of walnut, so that their upper surface, which is 32.5 above the shank, is, on the average, about 5.8 wide. The striking surface is a block of oil-tanned leather, about 4 thick throughout most the compass (but about 3 thick in the highest octave), glued to the top of each wooden hammer-head stem. The hammer heads are caught by checks which consist of leather pads on brass wire stems inserted into the key levers.

Because the gap and striking-point line are set diagonally, the key levers vary in length from 443 at C to 367 at $d^3$. The balance points of the natural keys are set consistently at the midpoint between the key fronts and the escapement jacks. Because of the stepwise grouping of the hammer butts, the mechanical proportions of the action change gradually within each group and abruptly
at each division. Representative measurements of the distance that the hammer rises as the front of
the natural key is pressed down 1 mm. (after it
has been pressed down to eliminate all gaps
between the action elements) are 11 at C; 9 at A;
11.5 at e²; and 10 at d³. The hammer-stroke
distance is 42 at C, 40 at d³. The finger weight
necessary to play the softest pianissimo is 35 g. at
C, 31 g. at e² and d³.

The dampers consist of thin slips of an
unidentified hardwood guided between the two
strings of each note by leather-covered upper and
lower guides, similar to harpsichord-jack guides.
At the top of each slip is a block of another
unidentified hardwood, the wedge-shaped lower
portion of which is covered with a layer of red
cloth that passes through a slot in the slip. There
is no mechanism to raise the dampers, nor are
there any other stops, knee levers, or pedals. The
entire action can, by grasping the end blocks, be
slid to the left to effect the una corda.

Scaling and stringing: the stringing is
bichord throughout the compass.

<table>
<thead>
<tr>
<th>Note</th>
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<th>Striking point</th>
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<td>20</td>
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<td>132</td>
<td>22</td>
</tr>
<tr>
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<td>36</td>
</tr>
<tr>
<td>e²</td>
<td>273</td>
<td>43</td>
</tr>
<tr>
<td>f¹</td>
<td>396</td>
<td>58</td>
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<td>e¹</td>
<td>529</td>
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<td>f</td>
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<td>e</td>
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<td>102</td>
</tr>
<tr>
<td>F</td>
<td>1486</td>
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</tr>
<tr>
<td>C</td>
<td>1776</td>
<td>138</td>
</tr>
</tbody>
</table>

Construction (fig. 5): the walls are of
spruce*, 16.5 to 18 thick (including veneer about
1.5 thick on the normally visible interior surfaces),
210 high (including veneer about 1.5 thick on the
upper edge); corners dovetailed. The front ends of
the spine and cheek piece are reinforced by
exterior brackets, between which there is a batten
on the underside of the bottom. Cheek piece 560
long (excluding the bracket); tail 232 long. The
angle of the tail with the spine is 89 degrees. To
the underside of the walls is attached the spruce*
bottom, 15 thick, which is in two parts, divided at
the belly rail, both with their grain parallel to the
spine. In front of the belly rail, the spine and
cheek piece are doubled in thickness by spruce
boards that support the ends of the wrest plank.
The wrest plank, of walnut about 22 thick
(excluding veneer), is reinforced by a yoke behind
the nameboard, by blocks glued to the spine and
cheek piece over its end, and by an iron bar (14 by
8) inset into its rear edge and fastened with
screws. The upper and lower surfaces of the wrest
plank are reinforced by a thin veneer of quartsawed
spruce with grain parallel to the spine. Toward its
back edge, the wrest plank is reduced in
thickness to clear the hammer shanks. The nut,
of an unidentified hardwood, is 9.9 wide by 8.2
high at C, tapered to 9.0 by 7.6 at d³; pins of
brass, 1.0 in diameter. The belly rails are of
spruce; lower belly rail 50 wide by 73 high; upper
belly rail 20 wide by 60 high). Throughout
most of their length, there is a narrow gap
between them, but in the central portion
(between the two diagonal struts to the upper
belly rail) the two belly rails are joined by a
batten. At the ends of the nameboard, yoke, wrest
plank, and both belly rails there are tenons that
pass through the cheek piece and spine. The bent-
side liner is about 22 wide by 47 high (the other liners could not be observed). Perpendicular to the spine are three bottom braces; the first (forward) brace is 74 wide by 43 high; the second is 74 by 49; the third is 67 by 48. Near the cheek, there is a bottom brace, about 20 wide by 118 high, between the lower belly rail and the bent side. Somewhat farther from the cheek is a diagonal strut from the lower belly rail to the bent-side liner. There are two diagonal struts from the upper surface of the first bottom brace to the upper belly rail, through which they are tenoned. Another diagonal strut runs from the bottom at the back edge of the first bottom brace to the bent-side liner just in front of the second bottom brace; although they could not be observed, it is likely that there are similar struts from the second and third braces to the bent-side liner. The hitch-pin rail is of walnut, 13 high at \( C \), tapered to 9 at \( e \) and 8.5 at \( d \). Although it is very wide (about 39 along the bent side), its lower edge is cut away from the soundboard so that it is free to the edge of the liner underneath. In addition to the hitch pins, there is a second set of pins to guide the strings near the front edge of the rail.

The soundboard is of spruce*, not accurately quarter-sawed, about 2.5 thick where measurable in the treble octave, set 130 above the bottom. The bridge is of an unidentified hardwood (apparently the same wood as that of the nut), bent to its curve (except the small curve at the bass end, which was sawed), 13.5 wide by 15.1 high at \( D \), tapered to 10.6 by 12.5 at \( e \) and 9.8 by 12.1 at \( d \); pins of brass, 1.0 in diameter. It is back-pinned throughout the compass. The complex system of ribbing is shown in the plan drawing. The main cutoff bar (placed diagonally between the spine and belly rail) is rectangular in section (with slightly chamfered lower edges), 18 wide by 36 high. The smaller ribs are, in general, about 7 wide by 23 high. The three ribs between the cutoff bars and the bent side are cut out under the bridge. A pair of pencil lines (indicated by dotted lines in the drawing) about 30 behind the middle one of these ribs presumably indicate where Antunes originally, but apparently mistakenly, intended to place this rib.

**Decoration**: the exterior is painted dark green, perhaps original, serving as a ground for later floral and foliate decoration in paint and gold. The interior surfaces around the keyboard and soundboard are veneered in Brazilian tulipwood (*Dalbergia frutescens* or a similar species...
of the same genus). On the yoke and the upper edges of the case walls the grain of this veneer was laid at an angle of 45 degrees with the longitude of these pieces. The front edge of the hitch-pin rail is molded with a bead. There are similarly molded fillets along the spine and front edges of the soundboard. The instrument rests on two trestles, 635 high (such that the surfaces of the natural keys are 693 above the floor), with cutouts in the form of inverted hearts on their side pieces.

**Condition**: the instrument is in a splendid state of preservation and is in excellent playing condition. There have been some minor repairs to the action. About half of the dampers are replacements, although many of the original ones retain their original cloth. All of the leather parts of the action are original (except for a few hammer-head leathers), as is the cloth that stops the upward motion of the keys.

**COMMENTS**

The Antunes piano belongs to the earliest path of dissemination of Cristofori’s invention. Florentine pianos might have been brought to Lisbon as early as 1719, when Domenico Scarlatti became Music Director at the Portuguese court. They certainly must have been present there by 1732, when Lodovico Giustini dedicated his twelve *Sonate Da Cimbalo di piano, e forte detto volgarmente di martelletti* (Florence, 1732) to the Portuguese Infante Dom António de Bragança, brother of King João V. Florentine pianos might first have become known in Spain when João’s daughter, Maria Bárbara, married the Spanish crown Prince Fernando in 1729. Among her possessions inventoried in Madrid upon her death in 1758 were several pianos made in Florence. In Portugal, no trace of Florentine or locally made pianos has survived from before the 1760s. Many of these instruments were presumably destroyed by the great Lisbon earthquake of 1755. This destruction, however, seems to have stimulated the making of new instruments by local makers during the following decades.

In 1760, Manuel Antunes obtained a royal privilege to be, for ten years, the exclusive maker and importer of *Cravos de Martellos* (harpsichords with hammers) Antunes claimed to have introduced improvements, which, although they are not specifically described in his application, seem to concern modifications to the standard action in order to reduce noise and increase the clarity (that is, perhaps, the rapidity) of execution. He also promised to sell these improved instruments at a lower price than usual. It seems likely that Antunes was referring to his escapement jack, which is mounted on top of the key lever rather than in a mortise cut through the key lever, as in Cristofori pianos. Antunes’ simpler design would have been easier to make (thus reducing the cost), and his lighter jacks might indeed have been more responsive to the player’s touch. The lead counterweights in the hammer butts might also have helped to increase the speed of the action. Another improvement (also found in other Portuguese pianos) is the division of the hammers into groups of only ten or eleven hammers on one axle wire, rather than all on the same axis. This facilitates removal of an individual hammer for repair or adjustment. The form of the hammer butts in this and other Portuguese pianos, with a large concavity on the lower side near the shank, is similar to that of the Cristofori piano of 1722.

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5. This possibility is discussed in David Sutherland, « Domenico Scarlatti and the Florentine Piano », *Early Music*, vol. 23, n° 2, May 1993, pp. 243-256.
7. Other Portuguese pianos of the period (an anonymous instrument in the collection of Harold Lester, London, and one by Henrique Van Casteel, 1765, in the Museu da Música, Lisbon) are described in Pollens, *op. cit.*, pp. 136-156. I have also examined a further example, by Mathias Bostem, Lisbon, 1777, in the Museu Municipal, Torres Novas ; I am extremely grateful to Gerhard Doderer for taking me to see this instrument.
8. The texts of Antunes’s application and the privilege are given in Vieira, *op. cit.*, pp. 37-38. An English translation of the application is in *Pollens*, *op. cit.*, pp. 138-140.
rather than the wholly convex form in the Cristofori pianos of 1720 and 1726. This suggests that the Lisbon makers modeled their instruments directly or indirectly after a Cristofori piano of about 1722.

The case construction of the Antunes piano is simpler and more robust than Cristofori’s. Rather than the Florentine master’s doubled bent side, Antunes made a conventional single bent side, with an entirely different system of framing. He also successfully dispensed with the gap spacers used by Cristofori, his pupil Giovanni Ferrini, and other Portuguese piano makers. Whether Antunes deliberately chose to make a normal wrest plank rather than the inverted form found in the Cristofori pianos of 1722 and 1726 or whether he was following Florentine models with non-inverted wrest planks (as in the Cristofori piano of 1720) is unknowable.

It is likely that Antunes based his piano on his usual harpsichord design. Indeed, the design and construction of the piano of 1767 are nearly identical to those of a harpsichord by Joachim Joze Antunes, 1785. Even the hammer striking points correspond almost exactly to the plucking points of the front row of jacks in the harpsichord (the piano dampers occupy the positions of the back row of harpsichord jacks). In the construction of the piano the only detail (except for the action) that is obviously imitative of Cristofori is the wide hitch-pin rail. Even this detail is deceptive, however, in that it is not attached to the separate outer bent side so as to float over the soundboard attached to the inner bent side, as in Cristofori’s work. Rather, it is merely undercut to allow the soundboard under the front portion of the hitch-pin rail to vibrate freely. While it is possible that Antunes did not observe or understand Cristofori’s unusual design (for which Antunes cannot be blamed in that it is hardly observable without cutting holes in the bottom or using modern tools such as endoscopes), he might deliberately have chosen to use his own construction, proven by experience, while taking from Cristofori only the concept of a wide hitch-pin rail, which is significantly stronger than the usual narrow rail.

According to documents recently discovered by Gerhard Doderer, Manuel Antunes was the elder brother of Joachim Joze Antunes, and they shared a workshop. Because two surviving harpsichords are signed by J.J. Antunes alone, the signature of the 1767 piano without a Christian name might indicate that the brothers made it together. Manuel, as the senior partner and holder of the privilege, was presumably responsible for its design.

The identification of the woods used in the construction of the Antunes piano presents great difficulties, both because Portugal is distant from other European centers of instrument making, whose patterns of wood usage are familiar, and because the seafaring Portuguese imported exotic woods, such as tulipwood from colonial Brazil, from around the world. The wood of the damper stems appears to be pearwood, and the nut and bridge appear to be of a wood like maple; with the limited samples available, microscopic examination can only establish that these appearances are deceptive. It should be noted that spruce is not found on the Iberian peninsula, so even the wood used for the soundboard and case must have been imported.

**GRAND PIANO (fig. 6 & 7)**
Louis Bas, Villeneuve-lès-Avignon, 1781.

**COLLECTION**

The Shrine to Music Museum, Vermillion, South Dakota ; Rawlins Fund, 1989 (cat. no. 4653).

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9. The extant Florentine pianos, made by Cristofori in 1720 (in the Metropolitan Museum of Art, New York), 1722 (in the Museo degli Strumenti Musicali, Rome), and 1726 (in the Musikinstrumenten-Museum of the University, Leipzig), and a combined piano-harpsichord made by Giovanni Ferrini in 1746 (in the collection of Luigi Ferdinando Tagliavini, Bologna) are described in Pollens, op. cit., chaps. 3 and 4.

10. In the Finchcocks collection, Goudhurst, Kent. I thank Christopher Nobbs for providing a technical drawing of this instrument.
by Bruce King of Houston, Texas, who purchased the instrument in New York in 1949. A Bas « harpsichord of [1781], converted into a piano, […] for sale in New York in August 1949 » (see Donald H. Boalch, *Makers of the Harpsichord and Clavichord*, 1440-1840, 1st ed., London, George Ronald, 1956, p. 5) was undoubtedly the same instrument, although our instrument was unquestionably a piano from the start 11.

**Principal References**


**Description 12**

*Inscriptions* : painted on the soundboard, as if around a rose (fig. 8) :

7. Bas piano : plan.

8. Bas piano : inscription in the “rose” area of the soundboard.

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11. A « single-manual harpsichord […] converted into a piano » by Louis Bas, 1781, listed in the third edition of Boalch (edited by Charles Mould, Oxford, Clarendon Press, 1995, p. 233) as belonging to Margery Hallow of Houston, Texas, is undoubtedly also the same instrument. With a superficial look at the Shrine to Music Museum’s Bas piano, one might well think that this *clavecin à martiaux* might once have been a *clavecin à sattesaux*. It is, however, unthinkable that all signs of such a conversion (e.g. the substitution of the present inverted west plank for one in the normal position) could have been effaced.

12. Because a thorough description of this instrument has already been published in my 1994 article, only a summary is included here.

L BAS FECIT 1781
written in ink on a piece of paper glued to the
bottom board in the interior under the soundboard
(readings in brackets are conjectural):
Ludovicus Bas
faciebat
villanova [prope] avenion[em]
22e 9[bre (i.e., Novembre)] anno 1781

Fait
par Louis Bas a villeneuve
[îles] avignon le 22[em] nov.[embre]
1781

**Principal Dimensions**: length 2162; width
935 to 942; height 255.

**Keyboard and Action** (fig. 9): the compass is
**FF** to **g** (63 notes); naturals covered with ebony,
sharps covered with bone, 73 long; three-octave
measure 465.

The action is of the Cristofori type, with several
differences in detail. The pearwood escapement jack
(fig. 10a), resembling a harpsichord jack tongue
widened at the top to form a T, is mounted in a
pearwood holder attached to the key lever with a
wire stem. The spring is a bristle inserted into the
holder in the manner of a harpsichord jack spring.

The hammers are hinged with leather to the
front rail of the action frame. Except for the upper
portion of the hammer head, each hammer is
formed from a single piece of pearwood. Fragments
of leather visible on the wooden cores of the
hammer heads (fig. 10b) suggest that the present
leathering of the hammer heads is not original,
although it appears to be quite old. The hammer
heads rest on two layers of coarse cloth tacked to a
batten over the intermediate lever hinges.

The mechanical proportions of the action,
constant throughout the compass, are such that
the hammer heads rise about 9.5 mm. as the fronts
of the natural keys are pressed down 1 mm. (after
these have been pressed down to eliminate all gaps
between the action elements). The hammer-stroke
distance varies from 37 in the bass to 41 in the
treble (the difference primarily due to the thinner
leather on the heads in the treble). The finger
weight necessary to play the softest **pianissimo** is
10 a. Bas piano: action. Hammers about 33 gr. at e¹ (for this measurement, a slip of wood was inserted to take the place of the missing damper).

Throughout the compass there were dampers (now missing), guided between the two strings of each note by leather-covered guides that closely resemble standard French harpsichord jack guides. The lower guide is connected to trapwork that raised the dampers. This mechanism and other evidently original trapwork that shifted the entire action to the left for the una corda were probably connected to pedals, which are now missing (rather than knee levers, for which there is no evidence on the presumably original stand).

**Scaling and Stringing**: the stringing is bichord throughout the compass.

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<thead>
<tr>
<th>Note</th>
<th>String length</th>
<th>Striking point</th>
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<tr>
<td>f³</td>
<td>128</td>
<td>5</td>
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<tr>
<td>c³</td>
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<tr>
<td>FF</td>
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<td>169</td>
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</table>

Most of the strings appear to date from the eighteenth or early nineteenth century, and many could well be original. Thus, the stringing scheme seems to have been approximately as follows:

10 b. Bas piano: action. Escapement jack and details of escapement tongue.
Construction (fig. 11): the walls are 237 to 240 high (excluding the bottom), and 15.5 to 20 thick; spine, tail, and bent side are of fir* (Abies alba), while the cheek piece is of poplar* (Populus). The cheek piece is nearly doubled in thickness, to 31.5, by an inner cheek of poplar*. The angle of the tail with the spine is 58 degrees. To the undersides of the walls is attached the fir* bottom, 15.5 thick, with its grain parallel to the spine. The walnut wrest plank is placed above the strings in the Cristofori style. The nut, of beech, has pins to guide the strings.

There are separate upper and lower belly rails. Between the spine and the bent side are three poplar* bottom braces, shaped to form knees at their ends. Between the back of each brace and the bent side is a substantial fir knee. There are a fourth knee between the belly rail and the treble portion of the bent side and a fifth knee at the tail.

The soundboard is of quarter-sawed spruce* (Picea abies), about 3 thick, set 143 above the bottom. The bridge, which is back-pinned throughout the compass, is of beech, bent to its curve, except in the extreme bass, where a scarfed-on section is sawed to the curve. The soundboard is reinforced by a cutoff bar and by three smaller ribs between it and the spine liner.

Decoration: the soundboard is decorated in gouache. The case is painted bright green, under which are original surfaces (or grounds?) of grey on the exterior and vermillion on the interior. The
upper edges of the case are molded and gilt in the
typical manner of eighteenth-century French
harpischords. The nameboard is removable
(fig. 12). The stand, in a rather coarse variety of
Louis-XV style, is 670 high, such that the surfaces
of the natural keys are 740 above the floor.

*Condition*: the instrument has survived as a
remarkably well-preserved document, primarily
because there has been no thorough attempt to
restore the instrument to playing condition.
Several hammers and jacks are missing. The action
cloth (which is in quite good condition) and
leather (much of which is in a fragile state) are,
except for the hammer coverings, probably
original.

**COMMENTS**

Except for the examples made by Johann
Heinrich Silbermann in Strasbourg in the 1770s,
which may be considered as culturally German,
the Louis Bas instrument of 1781 is the earliest
known extant French grand piano. The place of
the Bas piano in the Silbermann branch of the
Cristofori tradition is demonstrated by several
details of the action. Although Gottfried
Silbermann copied his action more or less exactly
after Cristofori, by the 1770s his nephew Johann
Heinrich Silbermann attached his hammers with
leather hinges (rather than to an axle wire),
eliminated the checks, and provided a cloth-
covered rail on which rest the hammer heads (in

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purer versions of the Cristofori action, such as Antunes’s, the hammer heads float when at rest, the hammers being supported by the contact of their butts with the intermediate levers). These features of the Strasbourg Silbermann pianos were copied by Bas. Perhaps also derived from J.H. Silbermann was Bas’s escapement jack, which (coincidentally, like Antunes’s) is mounted above the key, not in a mortise cut through the key. A somewhat similar form of jack was present in an action said to have been used in a J.H. Silbermann square piano 14. Bas’s use of thick iron strings for the treble notes, rather than the brass strings presumably used by Cristofori (and certainly by Antunes), is also evidence of his connection with the Silbermann branch of the Cristofori school: the Silbermanns used iron strings in the treble 15.

In general, Bas diverges from his Italo-Germanic models in the delicacy and light weight of his action parts. For example (in addition to the light escapement jack), instead of a block-like hammer butt holding a separate shank, the hinged end of his hammer, in a virtuosic display of wood carving repeated (presumably with the help of carefully designed jigs) 63 times without noticeable variation, is formed from the same thin piece of wood as the shank and also the lower portion of the head. The hammer heads are not, as in Cristofori and Silbermann pianos, rings of paper, but neither are they heavier than the wooden blocks that support those rings. The apparent intent of Bas to make the components of his action as light as possible is probably directly related to his upbringing in the French tradition of harpsichord making.

Although the piano of 1781 was made in Villeneuve-lès-Avignon, Bas also worked in Marseille in 1783 and in Lyon in 1786, according to inscriptions on two spinets 16. A metrological analysis of the piano suggests that Bas worked according to the Lyonnaise pied of 341 mm. (and a pouce of 28.42 mm.) 17:

<table>
<thead>
<tr>
<th></th>
<th>Actual mm.</th>
<th>Actual pouce</th>
<th>Intended pouce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>2162</td>
<td>76.07</td>
<td>76</td>
</tr>
<tr>
<td>Width</td>
<td>935</td>
<td>32.90</td>
<td>33</td>
</tr>
<tr>
<td>Length of tail</td>
<td>255</td>
<td>8.97</td>
<td>9</td>
</tr>
<tr>
<td>Length of cheek piece</td>
<td>622</td>
<td>21.89</td>
<td>22</td>
</tr>
<tr>
<td>Front of case to:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>upper belly rail</td>
<td>452</td>
<td>15.90</td>
<td>16</td>
</tr>
<tr>
<td>lower belly rail</td>
<td>512</td>
<td>18.02</td>
<td>18</td>
</tr>
<tr>
<td>wrest plank back edge</td>
<td>413</td>
<td>14.53</td>
<td>14/2</td>
</tr>
<tr>
<td>Width of keys</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FF to f 3</td>
<td>797</td>
<td>28.04</td>
<td>28</td>
</tr>
</tbody>
</table>

14. See Rosamond E. M. Harding, The Piano-Forte: Its History Traced to the Great Exhibition of 1851, Cambridge, Cambridge University Press, 1933, p. 35. Harding’s drawing of this action, however, was based not on an instrument but on a model at the Württembergisches Landesmuseum in Stuttgart, Carl A. Pfeiffer study collection no. C 75; see Hanns H. Josten, Württembergisches Landesgewerbemuseum: Die Sammlung der Musikinstrumente, Stuttgart, Ernst Klett, 1928, p. 103. According to Aagie-Katharina Rickl of that Museum, there is no record of the whereabouts of the original J. H. Silbermann square piano upon which this model was based.


17. This value of the Lyon foot is given in Johann Georg Krüni, Oeconomische Encyklopädie, Brno, 1788, vol. 15, p. 520.
Also, many of the C and F string lengths seem to have been measured in integral or half pounces. Louis Bas's apparent use of the Lyon measurement suggests that he or his workshop tradition originated there.\(^{18}\)

GRAND PIANO (fig. 13)
Vincenzo Sodi, Florence, 1789.

COLLECTION
John Koster, Vermillion, South Dakota.

PROVENANCE
Purchased in 1900 from intermediaries in Italy, presumably acting for Leopoldo Franciolini of Florence, by Mary Elizabeth Brown for the Metropolitan Museum of Art, New York, where the instrument became acc. no. 89.4.2359. The present owner purchased the deaccessioned instrument from the Museum in 1983.

PRINCIPAL REFERENCES

DESCRIPTION

**Inscription** (fig. 14): in ink, under the soundboard: on the cutoff bar near the bridge:

__Firenze 1789 Agosto__

On the second cutoff bar:

__Vincenzo Sodi Fece A essere stato chiesto da tre Speriamo anc[h]e possa essere — un’èrè__

I thank John Henry van der Meer for his help in transcribing the inscription from my photographs. He suggests that what I read as «Agosto» (with rather large spaces between the first three letters) might be «il 4 otto[bre]» The meaning of the couplet («On having been asked by three, we hope also to be — a king») is obscure.\(^{19}\)

**Alterations and Original State:** the instrument, originally made as a piano, was fraudulently converted, almost certainly by Leopoldo Franciolini of Florence, into a three-manual harpsichord shortly before its acquisition by the Metropolitan Museum. Franciolini discarded the original keyboard and action and installed three new, crudely made keyboards and a crudely made harpsichord action. To provide room for the additional keyboards, he cut off the front portion of the soundboard, which had projected over the belly rail; he reduced the width of the wrest plank and moved it about 120 mm closer to the belly rail. He discarded the original bridge and installed new 8’ and 4’ bridges, as well as strips of wood under the soundboard to hold the added 4’ hitch pins; he removed the nut and covered the wrest plank with new veneer, onto which he glued new 8’ and 4’ nuts. He covered the exterior of the case with painted decoration and provided an elaborate new stand and presumably also the ivory plaque on the nameboard which is said to have read «Vincentius Sodi Florentinus Fecit — Anno Domini 1779» but which is now blank.

That the instrument was originally a piano is shown by the plugged holes of the original wrest pins (under Franciolini’s wrest-plank veneer, now removed), which are arranged for the close-paired strings of a piano and for triple stringing in the treble. The bass hitch pins, which appear to be original and undisturbed, also begin with a close pair (rather than a wide pair, as in a harpsichord). Also, the belly rail consists, as in pianos of Stein and the Viennese makers, of a single board cut away

\(^{18}\) A harpsichord of 1737 by Jean Bas (Louis’s father?) was made in Marseille: see Constant PIERRE, Les facteurs d’instruments de musique, les luthiers et la facture instrumentale, précis historique, Paris, Sagot, 1893, p. 135. If Louis was not born or trained in Lyon, the harpsichord-making tradition of the city might have come to him indirectly from a previous generation.

\(^{19}\) I thank Benjamin Martinez, Grant O’Brien, and Susanne Skyrn for their help in translation.

from the soundboard in the treble. If the instrument had been made as a harpsichord, the belly rail would have been positioned much closer to the front of the instrument and a supplementary batten would have been glued its front surface, under the front edge of the soundboard, to provide space underneath for the guide rack of the keyboard.

Principal Dimensions: length 2086; width 1014 (measured at the bottom, at the front of the spine and cheek piece); height 227 to 232.

Keyboard and Action: as indicated by the staggering of the original wrest-pin holes into natural and accidental lines, the original compass was FF to g3 (65 notes): the same compass is mentioned in a description of a Sodi piano published in 1786. The three-octave measure of the wrest pins is 485 to 490, which probably reflects the measure of the missing original keyboard.

Although Franciolini cut off most of the soundboard just in front of the belly rail, he seems

to have repositioned the section of soundboard nearest the check, about 170 wide, by removing it, cutting it off at the bent-side edge, and setting the original, nicely finished, front edge just in front of the edge of the belly rail. By aligning with the cutoff bar in the adjacent main portion of soundboard, which is still in its original position, with marks that presumably indicate the position of the cutoff bar as it continued under the treble section of the soundboard, one can estimate the original position of the front edge of the soundboard, i.e., that it projected about 85 mm. in front of the belly rail. This is comparable, for example, with the 86 mm. projection in a J.A. Stein piano of 1788. Sodi’s projecting soundboard suggests that he used an action in which the hammers are pivoted at the rear, with the heads facing forward. In all likelihood, it was a Prellmechanik with escapement of the type that Stein used. In any case, Sodi’s wrest plank is far too thick for the practicable use of an action with hammers facing back, as in Cristoforì actions: for the hammer shanks to clear the wrest plank, the heads would have had to be at least 55 mm. high.

Holes in the bottom and on the interior of the spine and cheek piece are consistent with the presence of a knee-lever mechanism to raise the dampers. Holes drilled through the wrest plank at each end, near the spine and cheek, and presumed pivot holes for a second set of levers on the interior of the spine and cheek suggest that were one or two other effects, perhaps controlled by hand stops at each end. These might have been one or more of the effects described in the 1786 account: Arpa, Mandolino, and Fagotto (although these were controlled by knee levers and pedals). In addition, una corda might have been effected by shifting the entire keyboard and action by hand, as in the Antunes piano. Such an una corda is mentioned in the 1786 description.

Scaling and Stringing: the instrument is bichord from FF to b² and trichord from e³ to g⁴. Although removal of the original bridge left some scars on the soundboard (especially noticeable in the bass and tenor, but invisible or, at best, extremely faint in the alto and treble), there are no signs of the original position of the nut. Therefore, the original scaling cannot be reconstructed. One could estimate that the FF strings were about 1650 long. It should be noted that, while Sodi’s harpsichords have very short scalings suitable for brass wire throughout the compass, the Sodi piano described in 1786 had strings of brass and steel (Acciajo).

Construction (fig. 15): the walls are of walnut, 13 thick (excluding the veneer on the interior), 227 to 232 high (including veneer, 2 to 3 thick, on the upper edge), and are attached to the edges of the bottom, as in Italian harpsichords. The bent-side/cheek-piece joint is mitered, but the spine butts to the tail. The bentside, double-curved to include the tail, was curved by means of saw cuts on its interior surface. The depth of these cuts is about half the thickness of the board, and they are spaced about 25 apart in the treble curve but about 14 apart in the tail curve. The angle formed by the tangent of the curve of the tail as it meets the spine is 67 degrees. The bottom panel, made of planks of poplar* and fir*, is 22 thick, 2070 long, and 987 wide; the cheek-piece side is 575 long. The wrest plank (the back edge of which, as shown in the plan drawing, is conjectural) is of walnut, 41 to 45 thick. In the belly rail, which is of poplar 26 thick, there are three holes (indicated by dotted lines in the plan drawing), 125 to 128 long by 22 high. The liners along the cheek piece and the curve of the tail are full-depth; the tail liner was sawed to its curve. The spine liner is of fir*, 18 to 20 thick by 55 high. The bent-side liner, of poplar, is 28 to 32 thick by 61 high, with strongly bevelled upper and lower edges. It was bent by means of saw cuts on the surface glued to the bent side. Where visible in the treble, these cuts are 19 deep and are spaced about 23 apart. Between the spine and the bent side are two bottom braces, the forward one

of fir*, 23 thick, the back one of poplar, 28 thick. Both are formed so as to be 43 high in their central portions but rising to form knees butting against the liners. There are five knees, some of fir, some of poplar, 22 to 30 thick, which butt against the bent-side liner (but not extending to the bent side itself); their tail ends butt against the belly rail and bottom braces. Between the belly rail and the bent-side liner near the cheek piece, there is a fir upper-level strut. The hitch-pin rail is of walnut, 17 wide by 7 high throughout the compass. The portion at the tail was sawed to shape, with the wood grain running parallel to the strings, while the rest, with lengthwise grain, was bent, where necessary, by means of saw cuts.

The soundboard (fig. 15) is of quarter-sawn wood, some planks fir*, some spruce*, about 3.5 thick, set 142 above the bottom. Its grain runs at an angle of 7 degrees with the spine. There are two curved cutoff bars of fir*, with a maximum height of 8 and maximum widths of 18 (the bar nearer to the bridge) and 16, these dimensions, especially the height, reduced toward the ends. They were bent by means of saw cuts on their concave edges. These cuts extend about halfway through the bars and are spaced about 50 apart in the treble. Between the spine and bent-side liners are two fir* ribs, 7.5 wide by a maximum of 17.5 high, tapered to about 10 at the ends. The attachment of each of the quite blunt ends is reinforced by two small blocks at the sides. The ribs are notched out for the cutoff bars to pass through them, but they are not cut out under the bridge. The extreme treble portion of the soundboard was reworked by Franciolini (presumably this was done because it had been damaged near the bent side, perhaps because the treble portion of the hitch-pin rail, which was replaced by Franciolini, had split). Under the front edge of this part of the soundboard is a spruce* batten (indicated in dotted lines on the plan drawing) similar to those that J. A. Stein used to reinforce the front edge of his piano soundboards. The glue at the edges of this batten, however, is sloppier and of a different
quality than Sodi’s glue elsewhere in the instrument, and under the batten are pencil lines, along with traces of glue and shreds of wood, which apparently indicate the position of the treble end of cutoff bar and a rib (its center line indicated by dotted lines on the plan drawing). One should note, however, that the underside of this portion of the soundboard is cleaner and smoother than the rest of the soundboard and that Sodi did not use pencil lines elsewhere.

Decoration: the case exterior, now with painted decoration added by Franciolini, was presumably originally the natural walnut of the walls (the Sodi piano described in 1786 also had a walnut exterior). The bottom edge is surrounded by a walnut molding. The interior around the wrest plank and soundboard is veneered in cypress* (Cupressus sempervirens) with its grain running horizontally. The upper edges of the case are capped with walnut veneer with its grain perpendicular to the longitudes of the walls. There is a cypress molding along the edge of the soundboard at the spine. The key cheeks are canted in the manner of J. A. Stein’s pianos. The interior decoration around the keyboard was thoroughly reworked by Franciolini, who also provided an elaborate but preposterous and crude stand with decorative carvings. Originally there seem to have been four legs screwed into blocks, traces of which can be seen on the bottom of the instrument (the Sodi piano described in 1786 had four turned and carved legs that could be unscrewed). Later, this number seems to have been reduced to three by removing the leg at the cheek-piece/bent-side corner and moving the legs under the front of the keyboard back to be even with the center of the cheek piece.

Condition: the instrument is in poor condition, principally because of Franciolini’s alterations. It is now partially dismantled for study.

Comments

Despite its poor state of preservation, this instrument is of considerable interest as an almost unique example of a late-eighteenth-century Tuscan piano (as we publish, a grand piano made by Vincenzo Sodi in 1786 has just been discovered). Although Franciolini is notorious for his fakery, including the addition of inscriptions, there can be no doubt that this instrument was indeed made by Vincenzo Sodi. The attribution rests principally on his inscription, which could not have been written after the installation of the soundboard (nor through the several holes in the bottom cut by Franciolini in order to install strips of wood to serve as a 4’ hitch-pin rail). The handwriting is similar to that of inscriptions in several Sodi harpsichords of 1780 (privately owned in the United States 22), 1791-92 (in the Tagliavini Collection, Bologna 23) and 1792 (formerly in the Heyer Collection, Cologne 24). The molding at the spine edge of the soundboard in the piano of 1789 is identical to that around the soundboard and wrest plank of the harpsichord of 1791-92. Further, as noted above, many details of the 1789 instrument are consistent with the description of a Sodi piano published in 1786, and it shares many details of construction with the harpsichord of 1780.

The resemblance of this piano to those of J. A. Stein is obvious. Sodi even adopted this form, with S-curved bent side, for his later harpsichords (for example, that of 1791-92 in the Tagliavini

22. This instrument is listed in Boalch, op. cit., 3rd ed., p. 636 (where it erroneously stated to belong to the Detroit Institute of Arts). I thank Glenn Guitrari of the Harpsichord Clearing House, Rehoboth, Massachusetts, for the opportunity to examine this instrument.
24. See Georg Kinsky, Musikhistorisches Museum von Wilhelm Heyer in Köln, Katalog, vol. 1, Cologne, 1910, pp. 109-110 and 264. The instrument was lost during World War II.
collection). He did not, however, imitate Stein's interior construction with massive full-depth liners, around which the outer case walls are essentially just decorative. Rather, his piano case is constructed lightly, more or less in the traditional manner of Italian harpsichords. Of particular interest are certain features of design and construction that are reminiscent of Cristofori's work 25 (perhaps Sodi learned his craft from one of Cristofori's pupils). Although Sodi did not imitate the double-bent-side construction found in the Cristofori's pianos and most of his harpsichords, Sodi's bent side was curved by the same technique of saw cuts on the interior. This method is also found in the Sodi harpsichord of 1780. The knees in the Sodi piano, which touch only the liner, not the bent side, are, in effect, similar to the flying-buttress-like supports found in Cristofori pianos of 1722 and 1726, his harpsichord of 1726, and the Ferrini harpsichord-piano of 1746 26. Flying buttresses very similar to Cristofori's and Ferrini's are found in the Sodi harpsichord of 1780. A light, curved cutoff bar relatively near the bridge is found in most of Cristofori's instruments and in the Ferrini of 1746. In at least one instance (the piano of 1726) this piece was bent by means of saw cuts, as were Sodi's quite similar cutoff bars. Although earlier Florentine makers made their soundboards with the wood grain parallel to the spine, angled soundboard grain, as in the Sodi piano, is found in other earlier Italian harpsichords 27. Sodi might have adopted this practice in order to stiffen the soundboard without having to attach the 8 or 10 ribs with which Cristofori usually reinforced his soundboards between the spine and the cutoff bar. The Sodi harpsichord of 1780, with its soundboard grain at an angle of 31 degrees with the spine, is reinforced only by two light, curved cutoff bars like those in the piano of 1789. In the piano, Sodi presumably installed the two bars (which are unquestionably original), crossing under the cutoff bars and bridge, in order to resist the downward pressure of the heavier strings.

25. The most thorough study of the construction of Cristofori's instruments is in Kerstin SCHWARZ, Bartolomeo Cristofori, forthcoming as a monograph published in 1999 by the Musikinstrumenten-Museum of the University (Leipzig) in Scripta Artium 1. See also POLLENS, op. cit., chap. 3.


27. Angled soundboard grain is found, for example, in an anonymous seventeenth-century harpsichord in the Tagliavini collection, described in L.F. TAGLIAVINI and J.H. VAN DER MEER, op. cit., 1986, pp. 74-85