Harpsichord & fortepiano

Vol. 15, No. 1 Autumn, 2010

Musical Instrument Research Catalog
(MIRCat)

A RENAISSANCE PIANO?

By Christopher Barlow

Inventions rarely happen completely out of the blue. Experiences usually help inspire the creative mind. So what might have lead towards Cristofori's invention of the piano? A few scanty references to Chekkers, Dolce-Melos and so on are tantalisingly thin on technical information. So I was intrigued by details given in Stewart Pollen's book *The Early Pianoforte* of a spinettino which had been converted to a tangent-striking action possibly in 1632. This tiny spinet, now in the Metropolitan Museum of Art in New York and inscribed Franciscus Bonafinis MDLXXV, is quite a conventional Italian instrument and certainly originally built with plucking jacks. (Jack rail supports are still *in situ*). It is now to be found with two sets of wooden tangents in place of the harpsichord jacks. One full set seems to be the most recent and there are just a few surviving from an earlier set of slightly different design. (For a complete description it is well worth reading Pollen's chapter in the above mentioned book). Was this an instrument that could have had a *musical life?* Could it be called an early piano? A working reconstruction might provide some answers.

Although I did not inspect and measure the original instrument, Pollen's book provides good photos and various measurements. There was enough information to work out the drawings needed to make a close reconstruction. In fact I aimed to make two versions using the different sets of tangents.

No alterations had been made to the original instrument to enable the tangents to run in the box register other than some realignment of the strings. There is no additional intermediate lever to accelerate the upward motion of the tangents so their travel is, therefore, the same as a jack. The tangents are a shaft of wood with an additional block on one side to strike the offset string. The complete set has no dampers and has very thin leather coverings on the striking surface. The few remaining from an older set have no coverings but there is a twist of brass wire that holds a leather damper. These will hang on the strings and thus arrest the drop of each tangent.

Having built two cases and keyboards I started to experiment with the tangents and it soon became apparent that the set with a leather covering and no damper had certain practical problems. The lack of damper means that the foot of the tangent must sit on the key lever when it is at rest or else the striking extension will hit the soundboard as it drops. This would cause a tapping noise each time the key is released. As far as I could tell there was no evidence of cloth or leather to cushion this and so there could be no alternate way to set up the action. This might lead to two possible routes: does the tangent stay in contact with the string like a clavichord or should it be set so that the key-dip is limited to allow the tangent to fly freely to the string for the last millimetre or two? I discounted the first idea immediately as a non-starter. The tangent would not form a fixed end to the string and enable it to vibrate – it's covered in leather for a start! It must be set up to stop a fraction short of the string. So the overall travel of the tangent can only be the height of the bridge less at least 5mm (say 3mm for the tangent block, 0.5mm clearance above the soundboard and 1.5mm clearance below the string). My experiments showed that due to the tiny amount of travel, and the fact that these tangents are covered, no musical sound was produced at all! Even removing the leather covering barely made a difference.

Trying the other set of tangents that are equipped with dampers enables the keyboard and action to be set up quite differently. Here the tangents hang on the string and it is possible to leave as much of a gap as you like between the bottom of the tangent and the cloth of the key lever. Halting the key-dip accurately is still critical to achieve some free flight before the strike of the string but it is now possible to set the keyboard up with some initial lost motion before the lever starts to lift the tangent. Within some obvious limits, the distal end of the lever will travel and accelerate a little before engaging and propelling the tangent upwards. Although the distance travelled by the tangent itself may be no greater than the

set without dampers it is certainly possible to achieve more momentum to the strike this way. Coupled with the bare striking surface, there is certainly just enough momentum to sound the string. It can produce a working instrument. This finished version has been successfully used by Philip Picket on a recording called "The Bones of All Men". The sound is small, perhaps just a little more than a small clavichord, but bright – some may say tinny. (It is well amplified on the recording however!)

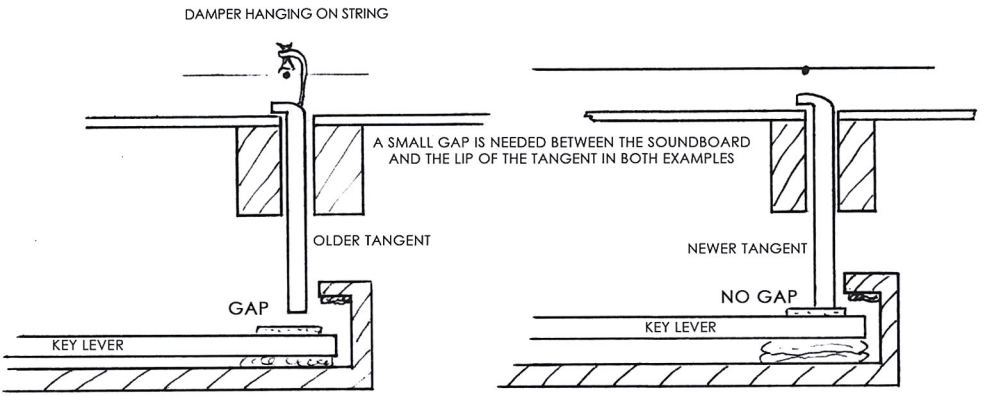
As this was really an experiment in practical archaeology, I concluded that the present complete set of tangents found on the original instrument would not really have produced a workable musical instrument at all but the earlier set are workable. Several questions arise. Were the newer tangents originally bare rather than leather covered? (That might have helped but would not have made much difference due to the limitations imposed by the lack of dampers on the keyboard set up.) The earlier set would seem to be the more practical – so why were they abandoned for an inferior arrangement? Or is it incorrect to assume that the complete set of tangents is more recent? It would be more natural to progress from an idea that didn't really work to one that did. And wouldn't it have been easier to have applied leather coverings to these rather than make a new set and omit the dampers? I think it is more logical that the four remaining tangents are in fact newer than the complete set. If I'm right that the keyboard can be set up with a greater motion than the distance travelled by the tangents, then the cloths must have been changed when the tangents were changed. Studying the keyboard's cloth might tell something more but probably not how the keyboard was set up when the earliest set of tangents were fitted.

I would suggest that the earlier incarnation worked probably enough to be a curiosity rather than a useful instrument. Why it was changed to something that was virtually useless is difficult to guess. Whichever of the two sets of tangents came first may be a question for debate but this little instrument does show that someone was thinking about a percussive keyboard instrument with a certain amount of determination in the decades before Cristofori.

Postscript

I felt there was no point finishing the second instrument with tangents so it was finished as a very useful musical octave spinet!

I would like to acknowledge the help and interest from Stewart Pollens, firstly via his book The Early Pianoforte *(Cambridge University Press ISBN 0-521-41729-5) and from a conversation with him at the Lausanne Rencontres Harmoniques Conference on Early Pianos in 2008.*



ALTERNATIVE SET-UPS USING THE TWO TYPES OF TANGENTS
Note the greater motion of the key lever in the left drawing
The tangent without the damper has a thin piece of leather on the striking surface.