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Losing their heads...?

Andrew Stewart

Necks, chopping blocks and weighty academic axes have been much in evidence in recent times, thrust out in relation to the vexed issue of performing pitch during the 16th century. Inspired by observations put forward by Nicholas Mitchell and backed by surviving antique instruments, Philip Pickett decided to risk scholarly decapitation and commission a series of wind, string and keyboard instruments for his New London Consort at pitch standards that existed throughout Europe during the time of Josquin, Lassus and Palestrina.

According to Mitchell's calculations, most 16th-century harpsichords would have been pitched a fourth below the typical woodwind consort of treble, two tenor and bass recorders. While the argument in favour of a common European pitch standard for the period 1400 to c.1600 made sense on paper, it required Pickett's faith and financial investment, together with the craftsmanship and patience of harpsichord builder Joel Katzman, to underline the point.

Pickett invited the Amsterdam-based Katzman to create a copy of the 1531 Trasuntino gravicembalo, now housed in London's Royal College of Music. The replica instrument was to have iron strings and two interchangeable keyboards, one yielding a low pitch of a=348, the other set at the high pitch of a=466. Katzman's response to the Pickett commission embraced ideas on pitch set out in various treatises by Michael Praetorius, Schlick, Bermudo and others. He was ready and willing to open his mind to Mitchell's universal pitch standard, and tackle the muddle and confusion associated with instrumental participation in polyphonic compositions from the 15th to 17th centuries. The instrument maker admits, however, that theoretical writings alone often deliver notoriously partial evidence, short on context and clear meaning for the modern interpreter.

"I cite the opening lines of the American Declaration of Independence as example," explains Katzman. "'We hold these truths to be self evident, that all men are created equal.' Now that statement applied to an emerging nation at a time when the holding of slaves was commonplace and the franchise was limited among free people to males over the age of 21 who held a certain minimum value of property. That line made perfect sense to its first readers, but it seems utterly absurd in our context." Likewise, he adds, 16th- and early 17th-century writings on organ building and instruments are notoriously difficult to interpret.

While musicologists and organologists debate the meaning of passages from Schlick or Praetorius, it seems that surviving 16th-century keyboard instruments, the Royal College Trasuntino among them, offer further contradictions and limited help to today's harpsichord maker. Above all, says Katzman, replicas of ancient instruments must follow a fixed pitch, whether it be a=440 or any perceived historical variation from the modern norm. "I can do all the woodwork – that's no problem! The real problem comes when I put on those strings. Of course, you have to assume a pitch standard for the instrument otherwise you simply can't proceed. That is particularly true when you're attempting to create an instrument where no playable examples have survived. The builder is then in some ways shooting in the dark. Personally, I hate doing that, but sometimes there is little choice." He adds that the much-restored Royal College instrument could easily be converted to play with one set of eight-foot iron strings without endangering the instrument.

"When one measures an antique instrument, no matter how perfectly accurate those measurements are and how fine a craftsman one is, unless one has heard the original there is no way of evaluating whether what you've done is musically adequate. The most critical factor in building a harpsichord is the quality of the wood used in the soundboard, which varies enormously in its mechanical and acoustical properties. There's no way you can know how an antique instrument sounded simply by observing and measuring the thickness of its soundboard. I probably wouldn't have become involved in copying the Royal College instrument without first having had the opportunity to hear and play a similar 16th-century instrument, which is probably also Venetian in origin."

Katzman faced the challenge of creating an instrument that satisfied Mitchell's theoretical interpretation while delivering an excellent quality of sound. "One of the arguments that people have put forward against this low pitch is that it requires too long a length of string to work with brass strings and too short a length of string to work with iron." He suggests that scholars, makers and players have been too ready to accept that for a harpsichord to sound well each string must be placed under a tension very close to its breaking point. "In practical terms, that means a string must be tightened to within two semitones of its breaking point."

The maker cites his considerable experience of building instruments based on 17th-century French models, among the usual characteristic features of which are short scales yielding a pitch around a=392 and a c'' string length of approximately 30cm. "That's a very low tension and such a string is very far from its breaking point; in fact, it's around four, possibly five semitones from the breaking point, depending on the type of wire you use. What is clear is that this is very different from the situation with Ruckers instruments. The idea of creating an instrument under low tension represents no problem for me. I know that, if done correctly, an instrument can sound perfectly well with iron strings even at three semitones below their breaking point."

Katzman points out that the particular and distinct sound quality associated with 17th-century French instruments is immediately affected by slightly changing the tension on each string. "This characteristic of tone means that at a pitch around a=392 you get the most obviously lute-like sound, as if the instrument possessed gut strings. Any slacker in tension and it starts to sound false; any higher and you start to lose that darkness of sound. This concept of tone is clearly a historically sanctioned one. It has always been my underlying assumption that the harpsichord was designed to function as a keyboard substitute for the lute; therefore, it must have been in the front of the mind of builders and players that this lute-like sound was the desired quality."

By setting the tension of a metal string close to breaking point, it follows that its tone becomes more overtly metallic; conversely, low-tension, thick iron strings offer a rich and attractive tone not unlike that associated with the gut strings of a lute. Katzman's Trasuntino replica serves as an ideal vehicle for polyphonic music, presenting a smooth sound blessed with considerable sustaining qualities. "I've become infamous for using the L-word," he observes. "The lute introduces a sound concept to a modern keyboard player completely alien to that which they associate, if only subconsciously, with the modern piano. Forty years after people began building harpsichords according to historical principles, the modern piano is still asserting its influence on how people think about the harpsichord. That gives us a wonderful analogy to remind us how in the same manner the lute must have shadowed and influenced the way people thought about the early harpsichord."

While it is quite understandable that makers and performers would have cared about the sound quality of an instrument, would they have imposed a uniform, pan-European standard of low pitch? "When you consider that so much published music was disseminated throughout Europe and that so many of the principal instruments were manufactured in particular centres, it makes sense to consider that a pitch standard may have existed," Katzman replies. Before Ruckers assumed the position of dominant makers, he observes, earlier generations favoured the work of Venetian harpsichord builders.

"Harpsichord building was pursued in Venice for the first time anywhere on an almost industrial basis - there was a whole community of harpsichord makers working to very standardised patterns and specifications. They had disciplined, preconceived notions of how to build an instrument, what materials were to be used and what it should sound like. These instruments were built not only for local consumption but also for export throughout Europe. What we're looking for is a simultaneous solution to the pitch problems thrown up by the surviving instruments and the music itself."

Katzman adds that Philip Pickett's search for a cogent pitch solution has been governed by the evidence of 15th- and 16th-century compositions, a practical approach that finds favour with the keyboard maker. "The lute must have been shadowing and influencing the way people built harpsichords, which is why they tried time and again to make a Lautenwerk with gut strings. There is no reason, however, why we should now continue with this fad for only using brass strings set close to breaking point, when low-tension iron strings give the most gut-like and rich sound quality."