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Author(s): Jane Bowers

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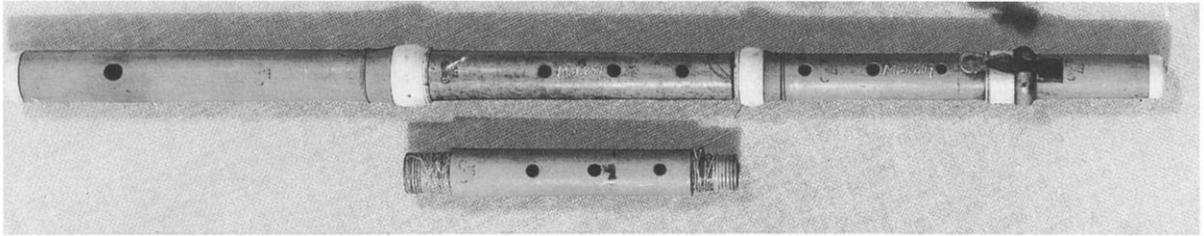


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Jane Bowers

Mozart and the flute



1 One-key flute with two upper middle joints by Jacob Denner (1681–1735) (Germanisches Nationalmuseum, Nuremberg)

In *The Art of Playing the German Flute* (London, 1793), John Gunn pointed to a controversy about the ideal sound of the flute that had arisen during the course of the 18th century:

Two opinions seem chiefly to prevail on the method in which this instrument ought to be played. The first is, that an equal fullness of tone ought to be aimed at throughout; and this, when required, is thought to be the greatest excellence of which the instrument is capable. The favourers of this opinion have on their side the example and practice of almost every public performer. The other opinion is in direct opposition to this, those . . . say, that this kind of tone is contrary to the very nature of a Flute; the character of which, from its affinity to the female voice, is softness, grace and tender expression, and can by no means be the bold and warlike expression of those full and loud tones, which seem to emulate the notes of the trumpet . . . I have often smiled at the conflict of these jarring opinions . . . and have given little satisfaction to either party, by declaring . . . that it was like asking a painter whether it were better for a picture to be all light or all shadow.¹

This conflict had emerged much earlier in the century. In 1702, when François Ragueneau described renowned French flautists as knowing how to make the flute moan in such a touching manner and sigh so amorously,² he was describing the aesthetic ideals of the early 18th-century French flute school. After French composers of flute music adopted the Italian sonata style, however, a conflict arose between those who favoured the older style and those who cultivated the new. In 1752 Pierre Louis d'Aquin wrote:

It [the flute] today has renowned players who have brought it, if you wish, wholly to perfection; that is to say, they play the most difficult and least singing things on an instrument that is, however, only made to touch the soul and to move us. I may be

mistaken, but I believe that beautiful melody, rather than speed and passagework, is more the essence of the flute.³

That the debate between expressive and virtuoso playing was also carried on in Germany is illustrated by Christian Friedrich Daniel Schubart's discussion of the playing of the eminent flautist Johann Baptist Wendling. Schubart wrote:

His playing is clear and beautiful, and his tone in both low and high registers equally full and penetrating. He takes greater pride in bringing forth the beautiful and the touching, than the difficult, rapid and surprising. Thus, he calls the lovers of difficulty only leapers and jugglers; and in this he is only half right, for the successful mastery of great difficulties has always been an important feature in the character of true artists. The continual searching and straining for languishing tones cripples the hand.⁴

Another frequently discussed aspect of flute playing was intonation. In 1752 Johann Joachim Quantz advised:

Pieces set in very difficult keys must be played only before listeners who understand the instrument, and are able to grasp the difficulty of these keys on it; they must not be played before everyone. You cannot produce brilliant and pleasing things with good intonation in every key, as most amateurs demand.⁵

Nearly 50 years later Johann Georg Tromlitz wrote:

I do not believe that there exists an instrument on which it is more difficult to play in tune than the flute. Many factors contribute to this: first, the natural unevenness of the tone of this instrument; blowing too hard or too softly; incorrect embouchure; a badly trained ear; an improperly tuned flute, etc. Experience gives enough proof of this.⁶

Good intonation was a problem for the flautist principally because the one-keyed flute in use through much

of the 18th century did not have separate, perfectly spaced tone-holes for all notes of the chromatic scale. Notes outside the flute's basic scale of D major had to be produced through cross-fingerings, which were often too sharp or too flat. Throughout the century, method books instructed flautists in how to adjust those pitches that were likely to be too sharp or flat. But because this was a tricky business, particularly in keys which required many cross-fingerings, the flute gained a reputation for being out of tune. When a fine player achieved good intonation it was worthy of special comment. Characteristic here is a comment Abert reports Mozart's making to the brother of the eminent flautist Wendling:

Well, you know, it's different with your brother. In the first place, he is not such a doodler, and then you don't always have to be afraid with him when you know a note is about to come that it is going to be much too low or too high—see here, it's always right. His heart is in the right place and so are his ears and the tip of his tongue, and he does not believe that you are done with just blowing and fingering, and then he also knows what Adagio means.⁷

Mozart, of course, was not a flautist, and perhaps disputes about the ideal sound of the flute were of little concern to him. Nevertheless, it is reasonable to assume that he was concerned with expressive playing and with good intonation, even if the passage above is spurious. Perhaps Mozart's widely quoted expression of abhorrence of the flute (see below) had more to do with the defective intonation and lack of expressive playing on the part of some of the flautists he heard, especially amateurs, than with the tone quality of the instrument itself.

However that may be, Mozart was exposed to the flute from an early age. At the court of the Archbishopric of Salzburg where his father Leopold was employed, there were four flautists in the year after Wolfgang's birth, and one was said to play concertos on the flute and oboe very well.⁸ Leopold, in fact, had written five flute concertos before Wolfgang's birth, and perhaps Wolfgang as a child had a chance to hear one or more of them played by one of the court flautists.⁹ Then, when he was seven and a half years old, the family stopped at Schwetzingen, the summer residence of the Elector Palatine Carl Theodor, and at a concert arranged specially for the Mozarts, heard Wendling, whom Leopold described as 'an admirable flautist.'¹⁰

Mozart himself began to write for the flute at an early age. Although the sonatas for harpsichord with the accompaniment of a violin or flute (K10–15) he wrote at the age of eight in London were clearly not conceived of for the flute—they show no consideration of the limi-

tations of its range, for one thing—he followed them up with some flute solos written for the Duke of Wirtemberg (K33a) in Lausanne in 1766 when he was ten; these works have been lost. He soon began to include the flute in larger ensembles. As early as 1767 he scored for flutes (with horns and strings) in one aria in *Die Schuldigkeit des ersten Gebots*, a Lenten oratorio of which he set Part I; a symphony (K43) in which two flutes replace the oboes in the Andante; and in six divertimenti for flute, horn, trumpet, trombone, violin, viola and cello (K67), which have been lost. In 1768 he included flutes in one aria in *Bastien und Bastienne*, as well as in a soprano aria in *Benedictus sit Deus* (K117/66a), in which they appear with horns, strings and organ. The pairing of flutes with horns in a number of Mozart's early works seems odd until one realizes that in other movements in these works oboes are frequently paired with horns, and the oboe players would simply have put down their oboes and picked up their flutes for the movements in which flutes appear. For this reason too, Mozart wrote for flutes in whatever keys horns were pitched, in spite of the fact that one of the most frequent horn keys, F major, was problematic for the flute.

As for symphonies, Neal Zaslaw states that 'Mozart's practice in his orchestral serenades and earlier symphonies was to use either oboes or flutes, not both . . . The few early symphonies requiring pairs of flutes and oboes played simultaneously originated as overtures to theatrical works.'¹¹ When oboes are used in the earlier symphonies, flutes often replace them in the slow movement. This works in reverse in the Symphony in A major, K114, in which flutes play in all but the Andante.

In 1775 Mozart heard the fine flautist Johann Baptist Becke, a member of the court orchestra at Munich, when Becke came to Salzburg to take part in a performance of a serenata by Domenico Pischietti as well as Mozart's *Il re pastore*, on the occasion of the visit of Archduke Maximilian Franz.¹² In *Il re pastore* the soloistic nature of the first flute part and its role in duetting with the tenor soloist in one of the arias, 'Se vincendo', shows Mozart's sensitivity to the flute's fleet-footedness in its upper register.

Another flautist Mozart encountered before his long sojourn in Mannheim which was to have important consequences for his flute composition was Johann Thomas Cassel, a double bass player in the Salzburg court chapel. Cassel played the solo part in a flute concerto by Mozart at a rehearsal on 25 July 1777; the identity of the work is uncertain. The performance presumably took place the next day at the Mozart home for the name day of Nan-

nerl Mozart.¹³

On 23 September 1777 Wolfgang and his mother set out on a long journey, stopping first at Munich and Augsburg, and reaching Mannheim on 30 October. In Augsburg Mozart was taken to visit the flautist, composer and Kapellmeister Friedrich Hartmann Graf, for whose performance of a concerto for two flutes in Graf's home Mozart had to play the first violin part. In a letter to his father, Mozart heavily criticized the concerto, although not the playing.¹⁴

In Mannheim, where he and his mother remained for more than four months, Mozart spent a great deal of time with the court flautist Wendling, who arranged for an important commission for Mozart. The commission came from a certain 'Indian' or 'Dutchman' named Dejean for 'three short, simple concertos and a couple of quartets for the flute' in exchange for 200 gulden.¹⁵ There has long been an air of mystery surrounding the identity of the amateur flautist who commissioned these works from Mozart. However, in an article published in 1981, the problem of his identity seems to have been successfully solved by Frank Lequin.¹⁶ According to Lequin's painstaking detective work, the person who commissioned Mozart's chief works for flute was Ferdinand Dejean (1731–97), a physician who practised for a time in Indonesia, settled in Amsterdam and took a degree in medicine at Leiden University, and became an internationally known scholar of medicine. After the death of his wife in 1773 Dejean travelled extensively through Europe and met Mozart in Mannheim.

In any case, Mozart had trouble fulfilling Dejean's commission, and in a letter to his father defending himself for not having completed the commissioned works, expressed his utter lack of sympathy for the flute. This comment has unfortunately been widely quoted as representing Mozart's lifelong attitude toward the flute. Here is the remark in context:

M. De Jean is also leaving for Paris tomorrow and, because I have only finished two concertos and three quartets for him, has sent me 96 gulden (that is, 4 gulden too little, evidently supposing that this was the half of 200); but he must pay me in full, for that was my agreement with the Wendlings, and I can send him the other pieces later. It is not surprising that I have not been able to finish them, for I never have a single quiet hour here. I can only compose at night, so that I can't get up early as well; besides, one is not always in the mood for working. I could, to be sure, scribble off things the whole day long, but a composition of this kind goes out into the world, and naturally I do not want to have cause to be ashamed of my name on the title-page. Moreover, you know that I become quite powerless whenever I am obliged to write for an instru-

ment which I cannot bear. Hence as a diversion I compose something else, such as duets for clavier and violin, or I work at my mass.¹⁷

On the one hand, Mozart's remark was doubtless coloured by the fact that he was smarting from Leopold's chastisement of him for not having finished the music for Dejean, at a time when Leopold was beset with worries about the financial situation of Wolfgang and his mother.¹⁸ Furthermore, his lack of enthusiasm for the flute at this time may have had something to do with the fact that he was writing for an amateur flautist. On the other hand, Mozart seems never to have been inspired to write solo flute works for a professional player, with the exception of the *symphonie concertante* he composed just a little later for Wendling on flute, Ramm on oboe, Punto on horn and Ritter on bassoon for those musicians to play in Paris.

In fact, Mozart was never to complete the flute works for Dejean, although in the letter quoted above he states that he had finished two concertos and three quartets. These have traditionally been presumed to be the flute concerto in G major, K313/285c; the flute concerto in D major, K314/285d (which is probably an arrangement of the oboe concerto in C major Mozart wrote in 1777);¹⁹ the quartet in D major, K285; the quartet in G major, K285a; and the quartet in C major, K Anh.171/285b. However, there are problems in transmission that cast severe doubts upon the authenticity of the G and C major quartets, and stylistic studies further suggest that the latter work is almost certainly not by Mozart.²⁰ Another work Mozart presumably wrote for Dejean is the Andante in C major for flute and orchestra, K315/285e. Since this work survives in an autograph copy there is no question of its authenticity, and the handwriting, the Mannheim paper on which it is written, and the assumption that Mozart would not have written for the flute without a commission, all point to its connection with Dejean. Nevertheless, Einstein's suggestion that this movement was written as an alternate middle movement for the G major flute concerto, since the original slow movement was 'so personal, one might say even so fantastic, so completely individual in character, that the man who had commissioned the work evidently did not know what to do with it',²¹ or that the movement may have been too difficult for Dejean,²² has been all too readily accepted.

From Mannheim, Mozart moved on to Paris. Here he wrote the *symphonie concertante* for flute, oboe, horn and bassoon (K Anh.9/297b), which was intended to be played at the Concert Spirituel, but, perhaps due to

intrigues on the part of Cambini, was not performed there; the work subsequently disappeared.²³

In Paris Mozart also received a commission from the Duc de Guines, an amateur flautist, whose daughter was a harpist. Mozart wrote to his father:

I think I told you in my last letter, that the Duc de Guines, whose daughter is my pupil in composition, plays the flute extremely well, and that she plays the harp magnifique.²⁴

For them Mozart composed the double concerto for flute and harp in C major, K299/297c.

To complete the picture of the solo and chamber works Mozart wrote for the flute, the A major flute quartet, K298, has been now firmly established as having been written in Vienna not before 1786, perhaps for a family that delighted in home music-making with whom Mozart was on friendly terms.²⁵ Finally, Mozart composed the Adagio and Rondo, K617, for glass harmonica, flute, oboe, viola and cello in 1791 for the glass harmonica virtuosa Marianne von Kirchgessner.

While Mozart's flute writing in his earlier works is by and large relatively simple, if not always idiomatic (see, however, the idiomatic flute writing in the Divertimento in D major for flute, oboe, bassoon, four horns and strings, K131), in his works for Dejean Mozart showed himself an astute judge of what worked well on a good instrument with a good player. In the two securely established works composed for Dejean, the G major concerto and the D major quartet (both extremely good keys for the flute), one is reminded of John Gunn's 'two opinions [which] . . . prevail on the method in which this instrument ought to be played'. There are passages which require bold expression of full and loud notes and exploit the brilliance and clarity of the flute in its upper register (for example, where the flute ascends to high *g'''* several times in succession in the recapitulation of the first movement of the concerto),²⁶ as well as passages which require softness, grace and tender expression.

Finally, in his later operas, symphonies and concertos, Mozart often pushed the flute to extremes, utilizing its third octave extensively (usually stopping with *g'''* but occasionally going as high as *a''' \flat* and *a'''*), assigning it chromatic passages and requiring it to play in difficult keys, and unquestionably treating it as an equal member of the ensemble. In an essay published in the *Allgemeine musikalische Zeitung* in Leipzig in November 1798, an anonymous author (whom Bernard Schultze identifies as A. André from Offenbach) particularly associates Mozart with high flute writing:

There was a time when the flute was not only called the softest

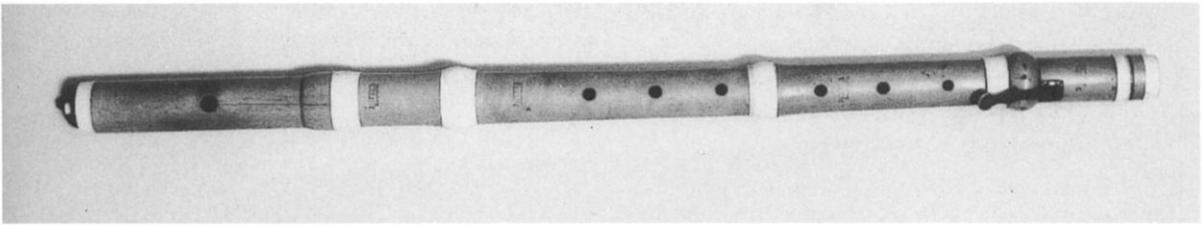
of all the instruments, but it really was; when it was proverbial and the ideal with which everything soft-toned was compared. Now things are different. The most modern composers usually write for this instrument so that it has to shriek or rather whistle piercingly in the high register; and Virtuosi love this sharp, cutting tone so much that they play everything in it—even their Solos and Adagios. Is this good? I am quite aware that a single flute piping in the high register, which as far as I know Mozart first introduced, or at least used most frequently, has an excellent effect in certain circumstances—as for example in the Overture to his *Don Giovanni*—but why do Gentlemen now write everything in this way? Why do Virtuosi now teach their pupils no other tone than this acute one? Why do Virtuosi now deliver everything in this piercing tone?²⁷

Certainly, in Mozart's later orchestral works, one can discern no trace of abhorrence or mistrust of the flute.

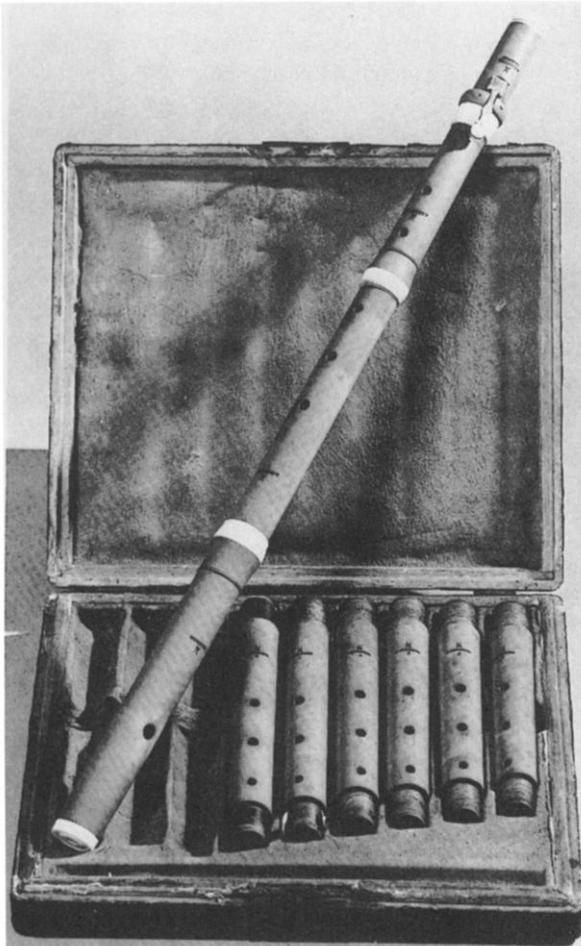
What sorts of flutes would the musicians who played Mozart's works have used? And would Mozart's later works have demanded flutes of a different sort from his earlier ones? Without a doubt, the flautists playing Mozart's early works would have used the type of four-piece one-key flute that emerged during the third and fourth decades of the 18th century.²⁸ Like the Jacob Denner flute seen in illus.1, this sort of flute had a head joint with an embouchure hole into which the player blew; two middle joints, each of which had three tone holes; and a foot joint with a seventh tone-hole covered by a closed key that could be opened to produce the lowest semitone (*e' \flat /d'♯*) on the instrument, as well as certain other pitches. Though the Denner flute illustrated here cannot be precisely dated, it was made before 1735, when Denner died, and it may be considered a typical late Baroque flute.

One of the reasons for dividing the flute's former long middle joint into two pieces was to make it easier to alter the overall pitch of the flute in order to accommodate the various pitch standards in use in different places. The lowest note produced by the flute when all the holes were closed was *d'*, but the absolute pitch of this *d'* varied according to the length of the column of vibrating air when all holes were closed. Notice that the Denner flute has an exchange piece which could be substituted for the upper middle joint if the player wished to play at a different pitch level. The shorter the upper middle joint, the higher the pitch. In this flute the *d'* produced by the two joints varies by a semitone.²⁹

Somewhat later in the century a different means for changing the overall pitch of the flute was devised. This was the division of the head joint into two parts, the



2 One-key flute with screw cork, tuning slide, and register by Richard Potter (1726–1806) (Horniman Museum, London)



3 One-key flute with seven upper middle joints and register by Carl August Grenser (1720–1807) (Germanisches Nationalmuseum, Nuremberg)

lower of which could be pulled out to lengthen the head joint and thus flatten the pitch of the instrument. After the introduction of a thin metal slide inside the wooden tube, some makers began to extend the inner metal tube to form a lining to the entire head joint.³⁰ In *illus.2*, a

one-key flute made by an important English flute maker, Richard Potter, whose work extends from around 1745 perhaps right up until the time of his death in 1806, exhibits such a tuning slide. In 1785 Potter was granted a patent for various improvements in the flute, including a metal tuning slide within an outer tube of wood that could be pulled out to lower the pitch of the instrument. Potter also included in his patent a screw cork in the head joint and a slide or 'register' at the extreme end of the foot joint, both of which could be adjusted to extend the length of the vibrating column of air. All three tuning devices were numbered, and when the three sets of numbers were made to correspond, the flute could theoretically be tuned correctly at different pitch levels.³¹ The flute in *illus.2* has all these features.

Illus.3 and *4* illustrate flutes made by two members of the famous Grenser family of Dresden. Carl August Grenser was born in 1720, began an apprenticeship in Leipzig in 1733, and in 1739 moved to Dresden, where he established his own workshop in 1744 and was appointed instrument maker to the Saxon court in 1753. His flutes earned him fame throughout Europe. His nephew Johann Heinrich Grenser, born in 1764, was August Grenser's apprentice from 1779 to 1786, and in 1796 the elder Grenser made over his business to Heinrich. August's period of activity as an instrument maker probably ceased in 1797, although he did not die until 1807. His last two known flutes are dated 1796; both are one-key instruments made of boxwood with ivory trim.³² Heinrich Grenser was a worthy successor to his uncle; he increased the fame of the workshop, was also appointed instrument maker to the Saxon court, and continued to make instruments up until the time of his death in late 1813.³³

The instrument in *illus.3*, a one-key flute with seven upper middle joints, was made by August Grenser, and it has been dated around 1775 by the Germanisches Nationalmuseum in Nuremberg.³⁴ The instrument in *illus.4*, also a one-key flute with seven upper middle joints, was made by Heinrich Grenser; it dates from



4 One-key flute with seven upper middle joints and register by Johann Heinrich Grenser (1764–1813) (Smithsonian Institution, Washington, DC)

before 1806 since it is stamped with Grenser's usual trademark, the crossed swords of Saxony, rather than with the Saxon crown with which he replaced it after this date. Both flutes have a register in the foot joint. There is no tuning barrel in the head joint as in the Richard Potter flute; rather, the exchange pieces adjust the pitch level of the instrument. Only one Grenser flute—and that

seems to be one of yet another Grenser, Heinrich Otto—has a tuning barrel.³⁵ According to Phillip Young, these two flutes are virtually identical, although they may have been made some 20 to 40 years apart.³⁶

One basic point these pictures make is that the design of the one-key flute did not change essentially between the mid-1730s and the end of the 18th century. However, such aspects of the flute as the diameter of its bore, the size and shape of its embouchure hole, the degree of undercutting of its embouchure and finger holes, etc., did vary, but apparently more by the maker than by the period. Until detailed studies have been made of the work of individual makers, clear profiles provided of their instrument designs and how they evolved over time, and systematic comparisons then made of the work of different makers, it will be virtually impossible to describe with any degree of precision the flute in the Classical era.³⁷ Current makers of flutes based on 18th-century instruments who have studied and measured a number of old instruments have suggested to me that at present it is not possible to describe any definitive pattern in the overall development of the flute at that time.³⁸

The size of finger holes appears to have remained about the same as earlier in the century. Embouchure holes, on the other hand, became quite diverse in size and shape. Rod Cameron has suggested that in general embouchure holes became slightly larger and more elliptical in Mozart's time, and Friedrich von Huene that they became much more oval. However, some makers retained small and more or less round embouchure holes late in the century. As for the flute's bore, Ardal Powell states that, while in the last quarter of the 18th century the number of flutes with very large bores was considerably smaller than earlier in the century, there was no unanimous progression from larger to smaller bores. According to Rod Cameron, while in the earlier part of the century the diameter of the head joint bore was 19 mm or more, in Mozart's time it rarely exceeded 18.6 mm. However, Friedrich von Huene stated that in England the head joint bore remained large (around 19 mm).³⁹

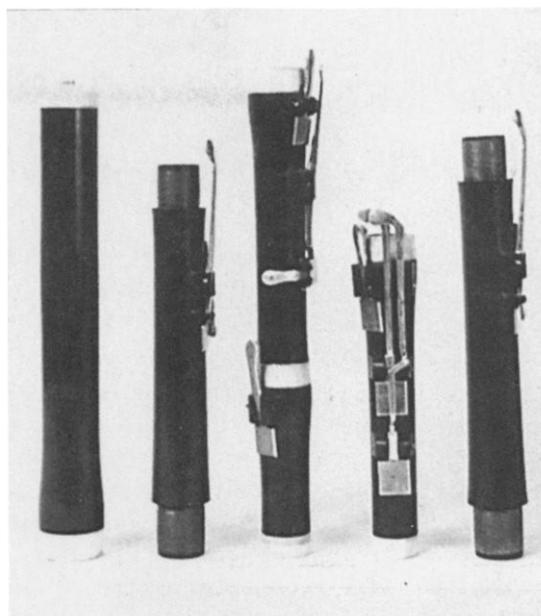
I have presented a rather generalized picture about the one-key flute in Mozart's time because we know virtually nothing about the specific instruments used by musicians who played his music. Then as now, some flautists undoubtedly played instruments locally made, while others ordered them from a distance or picked them up on their travels. In Salzburg no flute makers from Mozart's time have been discovered.⁴⁰ In nearby Berchtesgaden, however, members of the Walch family

may have been making flutes during Mozart's time, and a one-key flute with three upper middle joints signed 'G. Walch' in the Museum Carolino Augusteum in Salzburg (no.6/4 [Geir. 259]) may well date from that period.⁴¹ At least one instrument maker in Mannheim—Michael Eisenmenger (1723–88)—should have been making flutes at the time of Mozart's visit there, and two of his extant flutes have been described in print: a one-key flute in the Bachhaus in Eisenach (no.114),⁴² and the other owned by a Dr Senn in Innsbruck. Michael Eisenmenger is known to have made instruments for the Mannheim court, and Wendling testified to the quality of his work in 1781.⁴³

Yet we do not know what make of flute the flautists most closely associated with Mozart at Salzburg and Mannheim played. Wendling, for one, must have encountered many different kinds of flutes in the course of his travels, and Dejean also travelled widely.⁴⁴ It seems likely, however, that some of the musicians who played Mozart's music would have owned flutes made by the Grensers, especially August Grenser, since their flutes were widely admired. Still, when Leopold Mozart ordered two oboes and two english horns from August Grenser in 1772 for the court at Salzburg, he mentioned in a letter to J. G. I. Breitkopf that he only knew Grenser's name from having seen it on one or another flute and oboe. And since the Grenser instruments Leopold ordered did not arrive for six years (to Leopold's enormous frustration), and when they did the english horns played very poorly, it seems unlikely that Grenser's reputation gained much ground in Salzburg.⁴⁵

Another question that must be addressed concerns the number of keys on the flutes used by musicians to play Mozart's music. Well before Mozart's time experiments had been made to lengthen the foot joint of the flute so that it could play down to $c\sharp$ or c' . Additional holes for these notes were bored into a longer foot joint, and these were fitted with open-standing keys that could be closed to produce the lower notes. A few early 18th-century flutes were made with two keys: one for $e'\flat/d'\sharp$ and one for c' .⁴⁶ The Heinrich Grenser flute illustrated in illus.5 has two alternate foot joints. One is of standard length and has only one key. The other, longer foot joint, which appears second from the right in the illustration, has three keys—one for $e'\flat/d'\sharp$, one for $c'\sharp/d'\flat$, and one for c' . This flute also has other additional keys to which I shall now turn.

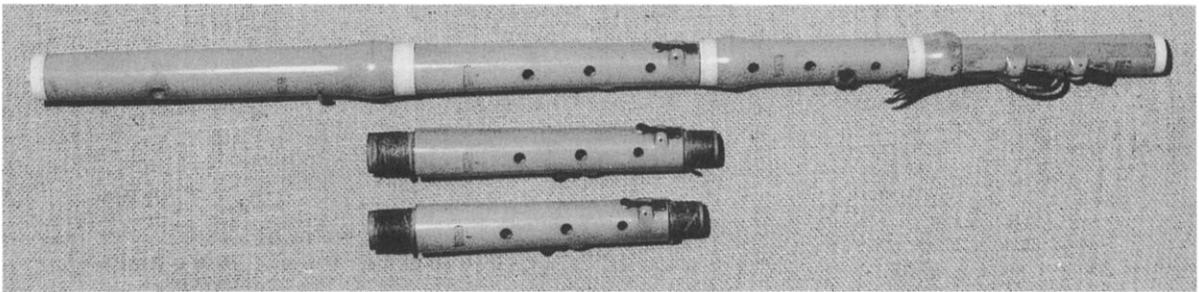
It was apparently during Mozart's youth that a few makers began supplying the two middle joints of the flute with additional keys. The definitive history of these



5 Five- or seven-key flute with two upper middle joints and two foot joints by Johann Heinrich Grenser (formerly owned by the Wichita Band Instrument Company, Wichita, Kansas)

keys has yet to be written, but their introduction seems to have arisen from attempts both to improve the intonation of and to strengthen the sound of certain cross-fingered chromatic notes. New holes for these notes were made in the instrument, and these were usually fitted with closed keys that the player opened to produce one of these notes. A few flutes simply added one or two new keys; but the usual number added was three—one for $a'\sharp/b'\flat$, one for $g'\sharp/a'\flat$ and one for f' . (These pitches were duplicated in the second octave of the instrument by means of overblowing.) These keys were primarily useful for playing long notes and trills, since they were rather cumbersome for fast passagework.

The earliest dated flute with all the new keys is a flute made by Caleb Gedney, an instrument maker in London who had apprenticed with Stanesby Junior; the flute is stamped 'CALEB/GEDNEY/1769' and is now in the Collection of Musical Instruments in the Museum of Fine Arts, Boston.⁴⁷ Since the Gedney flute also has a C-foot with keys for $c'\sharp$ and c' it is a six-key flute. Illus.6 shows a six-key flute now in the Bate Collection at the University of Oxford (no.1028) made in 1782 by Richard Potter (the foot joint is stamped 'POTTER/LONDON/1782'). The $b'\flat$ and $g'\sharp$ keys are on the upper middle joint and are designed to be activated by the thumb and little finger of the right hand; the f' key is located on the lower middle



6 Six-key flute dated 1782 by Richard Potter (Bate Collection, University of Oxford)

joint and is designed to be activated by the third finger of the right hand; and the $e' \flat$, $c' \sharp$ and c' keys are on the foot joint and are all designed to be activated by the little finger of the right hand. Richard Potter's earliest dated six-key flute is an instrument stamped 1776 in the Chicago Historical Society.⁴⁸ Potter was a very productive maker, and besides one- and six-key flutes, he made flutes with four, five, seven and eight keys. Perhaps more than any other maker he was responsible for popularizing the keyed flute. His 1785 patent included metal plug keys of conical shape which sank into tone-holes lined with silver tubes when the valves closed. Since these two flutes pre-date the patent, however, they may not have metal plug keys.

Almost certainly the Duc de Guines for whom Mozart wrote the flute and harp concerto had a six-key English flute similar to these Potter and Gedney instruments. The duke had been ambassador to London until 1776, where he would have had the opportunity to learn about the instrument and to acquire one.⁴⁹ This is confirmed by several passages in the concerto in which Mozart included not only low $d' \flat$ and c' but also a long $a' \flat$ marked with a crescendo to *forte*, which would have been impossible to make on the weak cross-fingered $a' \flat$ of the one-key flute.⁵⁰ Since the second movement of the concerto is in F major, it contains a number of passages which would benefit from the use of the f' and $b' \flat$ keys on long notes, although these passages are playable on the one-key flute.

In Dresden, while August Grenser primarily continued to turn out flutes with one key, Heinrich Grenser made many flutes with additional keys. His extant flutes have anywhere from one to eight keys, although more have one or four keys than any other number. In illus.5, on the flute's lower middle joint (shown attached to the short foot joint in the centre of the illustration), one can see a $g' \sharp$ key (which, unlike Potter, Grenser placed on the lower rather than on the upper middle joint) and an f'

key with two touchpieces—one to be activated by the fourth finger of the right hand and the other to be activated by the little finger of the left hand for passages in which the use of the fourth finger of the right hand was not feasible. On the two alternate upper middle joints (shown second from the left and on the far right in the illustration) one can see a $b' \flat$ key which appears to have been designed to be activated by the thumb of the right hand rather than the thumb of the left hand, which was much more common. In spite of Heinrich Grenser's frequent use of additional keys, in defending his work against the attacks of another instrument designer, Johann Georg Tromlitz, he wrote:

To add a key in order to improve this or that note, however, is neither difficult nor clever. The keys themselves are nothing new at all, for even as a boy I used them to strengthen the weak notes, and it was easy for me to assign them the right places because I was carefully instructed by my father in my earliest years about the appropriate place for each note. Since, however, the greatest art consists in building flutes on which one may accomplish everything without keys, it is therefore necessary to alleviate the deficiencies still prevalent in such flutes in a manner which works just as well as a key.⁵¹

Both Potter and Grenser set standards other flute makers attempted to follow. For example, in 1794 Johann Friedrich Boie of Göttingen advertised flutes made in the style of both Grenser and Potter.⁵² Under flutes in the latest English style, he described instruments made out of either black ebony or boxwood with a screw cork, metal tuning slides in the head and foot joints, and silver $d' \sharp$, f' , $g' \sharp$ and $b' \flat$ keys of the metal plug variety. Under flutes in the German style, he described instruments made out of black ebony and garnished with ivory with a screw cork, three middle joints, and from one to four silver keys ($d' \sharp$; $d' \sharp$ and $g' \sharp$; $d' \sharp$, $g' \sharp$ and $b' \flat$; or $d' \sharp$, f' , $g' \sharp$ and $b' \flat$); as well as one- and two-key instruments made out of boxwood and garnished with ivory. With German-style flutes, metal plug

keys had to be specially requested and a supplement paid.

English-style flutes, then, were associated with metal plug keys as well as metal-lined head joints. The keys would have facilitated the achievement of a more or less equal fullness of tone throughout the compass of the instrument, while the metal-lined head joint would have permitted the production of a bright, open and perhaps somewhat shrill sound. (Not all English flutes, of course, actually produced this kind of sound. Those with smaller embouchure holes and without metal-lined head joints would have produced a considerably more modest sound.) German-style flutes, on the other hand, were associated with exchange pieces and leather-padded keys, if they had additional keys. Even flutes with additional keys might have been designed so as to place less emphasis on the use of the keys to achieve good intonation and fullness of sound. Instruments in the Grenser style would have been capable of playing loud in both low and high registers, but would have produced a rather more covered sound than English flutes with metal-lined head joints.⁵³ (Of course, not all German flutes resembled Grenser flutes.)

Some flautists who played Mozart's music might have sought out English-style flutes; others might have preferred German-style instruments. But what about flutes made in Vienna, where Mozart spent the last decade of his life? We know virtually nothing about the kinds of flutes being made and played there until only a few years before Mozart's death.⁵⁴ On 12 November 1791 the instrument maker Friedrich Hammig announced in the *Wiener Zeitung* that he made all kinds of wind instruments, including oboes, bassoons, clarinets, flutes in the English and German style, and a new kind of basset horn.⁵⁵ What Hammig meant by the English style is clarified by another newspaper announcement of 26 January 1799, in which he cited the advantages of the Potter-style flutes he made: first, by pulling out the head joint one could play at all possible pitches with only one middle joint; second, its metal keys were far superior to keys covered with leather.⁵⁶ This accords with Boie's conception of English flutes cited above.

In the *Wiener Zeitung* of 26 May 1802 Franz Harrach announced that he had been one of the first in Vienna to make the keyed flute, and that he had been working for 14 years—thus since 1788, the date of Mozart's last three symphonies—to bring it to the greatest possible perfection. Harrach offered for sale flutes with one, four, six and eight keys, which he claimed had good intonation, a strong low register, and a high register in which it was

easy to play.⁵⁷ That keyed flutes were being played as well as made in Vienna in the 1790s is attested to by an announcement in the *Wiener Zeitung* of 20 March 1793 that the flautist Franz Thurner would be giving a concert in the Hoftheater, in which he would play concertos and variations on a nine-key flute he had designed and made with his own hands.⁵⁸ These keys might have included the usual $e' b$, f' , $g' \#$, $b' b$, $c' \#$ and c' keys, as well as a key for c'' and a second touchpiece for f' ; the ninth key might have been one of several possibilities. Still another Viennese maker, Stefan Koch (*b* 1772), worked particularly to enlarge the flute's range. Koch's extant instruments include flutes with joints that extend from c' all the way down to a ; they also have from seven to 15 keys.⁵⁹ However, most of Koch's flutes would be too late for Mozart's music.

One has the sense that by the 1790s many makers were jumping on the bandwagon and producing flutes with additional keys (although apparently not yet in France). Such new-fangled flutes made in the 1790s as well as the early years of the 19th century are thus quite suitable for playing music of the late Classical era, if not, strictly speaking, for Mozart's music. In Mozart's orbit, there seems not to have been an abundance of keyed flutes before 1791. At least, one cannot point to specific examples, except for that of the Duc de Guines, of flautists playing Mozart's works on multi-key instruments, as Catherine Smith has suggested may have been the case for Haydn's late works in London.⁶⁰ Moreover, even well after Mozart's death some players must have continued to use well seasoned instruments of an older design, and it would be wrong to assume that in modern performance we must always match up a musical work with the newest instrument made in the year of the work's composition. Most works of the Classical era require no more than a one-key flute. Nevertheless, some, especially orchestral works in remote and difficult keys, would certainly benefit from the more equal fullness of tone made possible through the additional keys.

Jane Bowers teaches music history at the University of Wisconsin, Milwaukee. Her main areas of research are the history of the flute and the subject of women and music.

Discussion

BRUCE HAYNES I'm surprised at the notion that it's difficult to date flutes; can't you draw a line of development and situate surviving models within that development?

JANE BOWERS Isolated makers dated their instruments, but there just aren't any clear-cut lines of development

which would enable us to date instruments, until someone works out some guidelines for this. It would be guesswork.

BRUCE HAYNES What I found with oboes was that the Dresden makers who date their instruments were then copied by other makers, and then there were second-generation copies. You could begin to make a dating system that way.

NEAL ZASLAW On the question of enharmonic tunings, the 1780s and 1790s seem to be the period when there is a change in the matter of whether for example G \sharp is lower than Ab or higher, A \sharp is lower than Bb. Do the fingering charts show when this change happened?

BRUCE HAYNES I believe there's a connection between the addition of keys to the flutes and their tuning systems. Because the note *f'* was too fuzzy and the distance between *f'* and *f'♯* was too small they added a key, at which point the *f'* and *f'♯* could be in tune.

JANE BOWERS In Hotteterre's treatise of 1707 the assumption is that tuning is mean-tone, but there's already a perception that there's a problem with the tuning of the flute; it's just a technical thing.

DON SMITHERS What was the relationship in pitch between, say, Paris and Vienna?

BRUCE HAYNES My impression is that there were two or three Parisian pitches at that time, but that the Concert Spirituel, which is where Mozart and a lot of foreigners played, had the highest pitch around. If you compare other factors—like that French players played there and in the opera but maybe transposed—then perhaps the pitch was already near *a'*=440. Viennese pitch was regarded as high, so maybe the two were similar. But very little has been published yet on these matters.

¹John Gunn, *The Art of Playing the German Flute on New Principles Calculated to Increase Its Powers and Give to It Greater Variety, Expression and Effect*. . . (London, [1793]), pp.1–2. Quoted in M. Nastasi, 'John Gunn's "The Art of Playing the German Flute on New Principles", London 1793', in *Concerning the Flute*, ed. R. de Reede (Amsterdam, 1984), p.81

²D'ailleurs, . . . nous avons encore . . . les flûtes que tant d'illustres sçavent faire gémir d'une manière si touchante dans nos airs plaintifs, & soupirer si amourusement dans nos airs tendres.' *Paralele des italiens et des françois en ce qui regarde la musique et les opéra* (Paris, [1702]), pp.18–19

³Elle a aujourd'hui ses Illustres, qui l'ont mise, si vous voulez, dans toute sa perfection; c'est-à-dire, qu'on exécute les choses les plus difficiles & les moins chantantes, sur un instrument qui n'est fait pourtant que pour toucher l'ame & pour nous attendrir. Je peux me tromper, mais je crois qu'un beau chant, & moins de vitesse & de batteries, sont plus de l'essence de la Flûte.' *Lettres sur les hommes celebres dans les*

sciences la littérature et les beaux-arts sous le regne de Louis XV (Amsterdam, 1752), p.147. For further information about concepts regarding the character of the flute, see J. Bowers, *The French Flute School from 1700 to 1760* (Ann Arbor, 1977), pp.403–6.

⁴*Ideen zu einer Ästhetik der Tonkunst* (Vienna, 1806; R/Hildesheim, 1969), pp.143–4. Although this work was not published before 1806, Schubart dictated it in 1784–5 while in prison. The complete entry on Wendling reads: 'Wendeling, ein vorzüglicher Flötenspieler, der echte Grundsätze mit fertiger Ausführung zu verbinden weiss. Sein Vortrag ist deutlich und schön, und die Töne in der Tiefe und Höhe gleich voll und einschneidend. Er ist stolzer darauf, das Schöne und Rührende hervorzubringen, als das Schwere, Schnelle, Ueberraschende. Er pflegt diesefalls die Freunde der Schwierigkeit nur Luftspringer und Gaukler zu nennen; und hierin hat er nur halb Recht: denn die glückliche Besiezung grosser Schwierigkeiten ist immer ein Hauptzug im Charakter echter Kraftmänner gewesen. Das beständige Suchen und Haschen nach schmelzenden Tönen lähmt die Faust.

Seine Compositionen sind ungemein gründlich, und passen der Natur seines Instrumentes genau an. Zwar altern seine Melodien wie er selbst; dem ungeachtet müssen seine Stücke von jedem Instrumentisten mit Sorgfalt studiert werden.'

⁵Johann Joachim Quantz, *On Playing the Flute*, trans. E. R. Reilly (New York, 1966), chap. 16, para. 21, p.200

⁶*The Virtuoso Flute-Player by Johann George Tromlitz*, trans. and ed. A. Powell (Cambridge, 1991), pp.114–15

⁷'Ja wissens das ist was anders beim Herrn Bruder. Der ist erstens kein so Dudler, und dann braucht man bei ihm nicht jedesmal Angst zu haben, wenn man weiss, jetzt soll der eine Ton kommen, ist er wohl so viel zu tief oder zu hoch—schauens, da ists immer recht, er hat's Herz und die Ohren und das Zungenspitzl am rechten Ort und glaubt nicht, dass mit dem blossen Blasen und Gabelmachen schon was ausgerichtet sei, und dann weiss er auch, was Adagio heisst.' Quoted in H. Abert, *W. A. Mozart: Neubearbeitete und erweiterte Ausgabe von Otto Jahns Mozart*, 2 vols. (Leipzig, 7/1955–6), i, p.473. Abert cites Wolzogen, *Rezensionen* 1865, no.6, p.82, as the source of the quotation.

⁸'Nachricht von dem gegenwärtigen Zustande der Musik Sr. Hochfürstlichen Gnaden des Erzbischoffs zu Salzburg im Jahr 1757,' in Friedrich Wilhelm Marpur, *Historisch-kritische Beyträge zur Aufnahme der Musik*, iii (Berlin, 1757; R/Hildesheim, 1970), pp.186, 189. Under violinists, the 'Nachricht' lists Joseph Hülber, who also played the transverse flute. Under oboists and flautists, it lists Christoph Burg and Franz de Paula Deibl, both of whom also played the violin, as well as Johann Michael Obkirchner. The leading player seems to have been Christoph Burg from Mannheim; he is the one said to play concertos on the flute and oboe very well.

⁹Leopold Mozart gave the incipits of five flute concertos in a letter of 24 November 1755 to Johann Jakob Lotter; the concertos have not survived. *Mozart: Briefe und Aufzeichnungen, Gesamtausgabe*, ed. W. A. Bauer and O. E. Deutsch, i (Kassel, 1962), pp.22–3.

¹⁰Letter of Leopold Mozart to Lorenz Hagenauer, 19 July 1763, *The Letters of Mozart and his Family*, trans. E. Anderson (London, 2/1966), i, p.25

¹¹N. Zaslav, *Mozart's Symphonies: Context, Performance Practice, Reception* (Oxford, 1989), p.250

¹²The Mozarts appear to have known Becke for some time, and perhaps they got to know him well when Leopold and Wolfgang were in Munich during the winter of 1774–5 for the performance of Wolfgang's *La finta giardiniera*. Otto Erich Deutsch suggests that the engagement of both Becke and the soprano castrato Tommaso Consoli from the Munich court for the musical events surrounding the visit of the young archduke to Salzburg may well have been arranged by Leopold Mozart. Information about their engagement is provided by the diary of the Court Councillor at Salzburg, Johann Baptist Joseph Joachim Ferdinand von Schiedenhofen, relevant citations from which are quoted in various places, including Deutsch, *Mozart: A Documentary Biography*, trans. E. Blom, P. Branscombe and J. Noble (London, 1965), pp.150–52.

¹³Deutsch, *Documentary Biography*, p.161. On Cassel, see also O. E. Deutsch, 'Aus Schiedenhofens Tagebuch', *Mozart-Jahrbuch 1957*, p.23. Here Deutsch suggests that the concerto Cassel played was the D major concerto, K314/285d; this seems to be the likeliest hypothesis.

¹⁴Letter of Mozart to his father, 14 October 1777, *Letters*, i, pp.316–17

¹⁵Letter of Mozart to his father, 10 December 1777, *Letters*, i, p.414

¹⁶F. Lequin, 'Mozarts ". . . rarer Mann"', *Mitteilungen der Internationalen Stiftung Mozarteum*, xix (1981), pp.3–19. For a brief summary of Dejean's biography see F. Giegling, Foreword, *NMA V/14/3: Konzerte für Flöte, für Oboe und für Fagott*, p.viii, n.2.

¹⁷Letter of Mozart to his father, 14 February 1778, *Letters*, i, pp.481–2

¹⁸Leopold had written Wolfgang in a letter of [11]–12 February 1778, 'As soon as you receive this letter, I want you to write and tell me *how much money you have in hand*. I trust that you can count for certain on those 200 gulden. I was amazed to read your remark that you would now finish that music for M. De Jean at your leisure. It seems then that you have not yet delivered it. Yet you were thinking of leaving on February 15th?—You even went on a trip to Kirchheim—even taking Mlle [Weber] with you, with the result that of course you received less money, as the Princess had two people to reward, a present which otherwise you might have had for yourself. However, that does not matter. But, Good God! Suppose Herr [Wendling] were now to play a trick on you and M. De Jean [to break his word,] for the arrangement was that you were to wait and travel with them. Do send me news by the next post, so that I may know how things are.' *Letters*, i, p.479.

¹⁹In his edition of Mozart's Oboe Concerto (London, 1948), Bernhard Paumgartner suggests that Dejean may not have accepted the D major Concerto because it was not an original composition (p.1). This may explain why Mozart mentioned only one flute concerto in a letter to his father of 3 October 1778: 'I am not bringing you many new compositions, for I haven't composed very much. I have not got the three quartets and the flute concerto for M. De Jean, for, when he went to Paris, he packed them into the wrong trunk and so they remained in Mannheim. But he has promised to send them to me as soon as he returns to Mannheim, and I shall ask Wendling to forward them.' *Letters*, ii, p.622. For further information about the relationship between the oboe and flute concertos, see B. Paumgartner, 'Zu Mozarts Oboen-Concert C-Dur KV 314 (285d)', *Mozart-Jahrbuch 1950*, pp.24–40, and F. Giegling, Foreword, *NMA V/14/3*, pp.viii–x.

²⁰See especially J. Pohanka, Foreword, *NMA VIII/20/2: Quartette mit einem Blasinstrument*, pp.vii–x; W. Plath, Foreword, *NMA X/29/1: Werke Zweifelhafte Echtheit*, p.x; R. Leavis, 'Mozart's Flute Quartet in C, κ App.17', *ML*, xliii (1962), pp.48–52; W.-D. Seiffert, 'Schrieb Mozart drei Flötenquartette für Dejean? Neuere Quellendatierung und Bemerkungen zur Familienkorrespondenz', *Mozart-Jahrbuch 1987–88*, pp.267–75; and R. Lustig, 'On the Flute Quartet, K285b/Anh.17', *JRMA* (forthcoming). Seiffert makes much of discrepancies in Mozart's letters regarding the number of works he said he was commissioned to write and claims to have completed, questions his veracity with regard to these works in his letters to his father, and concludes that Mozart was really commissioned to write four quartets for Dejean but completed no more than two. The only extant autograph material from the C major quartet, a sketch of ten bars from the first movement, appears to date from several years after Mozart's sojourn in Mannheim (1781, according to Seiffert in the *Kritischer Bericht* of the *NMA VIII/20/2*, p.17), and for reasons too lengthy to recount here, the quartet in the form in which it is known today is very likely not by Mozart. The G major quartet also raises some questions. All editions before the old Mozart *Gesamtausgabe* combined the first movement of the D major quartet with the two movements of the G major quartet, thus creating a three-movement work that began in D major and ended in G major. As early as 1792 Artaria published the parts in this form; see especially A. Einstein, Preface, *W. A. Mozart: Quartet for Flute (or Violin), Violin, Viola and Violoncello, κ no.285a* (London, 1937). U. Toepflich, in *Die Holzbläser in der Musik Mozarts und ihr Verhältnis zur Tonartwahl* (Baden-Baden, 1978), p.96, suggests that the G major quartet is

utterly *galant* in character and far from the mannered Mannheim taste; it may have had an earlier origin. The C major quartet was first published by Bossler in Speyer in 1788. The A major quartet, K298, which belongs to a later period of Mozart's composition, did not appear in print before 1808, when it was published by Johann Traeg in Vienna. However, since Traeg announced in the *Wiener Zeitung* of 17 October 1787 that a quartet by Mozart could be had from him, this may well have been the A major quartet; see Deutsch, *Documentary Biography*, pp.300–301.

²¹A. Einstein, *Mozart: His Character, His Work*, trans. A. Mendel and N. Broder (London, 1945), p.283

²²*Chronologisch-thematisches Verzeichnis sämtlicher Tonwerke Wolfgang Amadé Mozarts von Dr. Ludwig Ritter von Köchel*, 8th edn, ed. F. Giegling, A. Weinmann and G. Sievers (Wiesbaden, 1983), p.296

²³On the Cambini connection, see especially B. S. Brook, 'The *Symphonie concertante*: An Interim Report', *MQ*, xlvii (1961), pp.501–2. For a thorough discussion of the *symphonie concertante* for oboe, clarinet, horn and bassoon which was published and performed under Mozart's name and until recently was regarded as a transcription of the lost Paris work, see R. D. Levin, *Who Wrote the Mozart Four-Wind Concertante?* (Stuyvesant, NY, 1988). Levin has also reconstructed the *symphonie concertante* for flute, oboe, horn, bassoon and orchestra (Kassel, 1983).

²⁴Letter of 14 May 1778, *Letters*, ii, p.538

²⁵On the A major quartet, see Pohanka, Foreword, *NMA VIII/20/2*, p.viii, and F. O. Souper, 'Mozart's A Major Flute Quartet', *Monthly Musical Record*, lxx (November 1940), pp.197–203.

²⁶Compare the D major flute concerto, in which the flute does not play above *e''*, presumably because the solo part is basically a transposition of that in the C major oboe concerto.

²⁷Quoted in B. Schultze, *Querflöten der Renaissance und des Barock*, i: *Eine historisierende, literarische Anthologie* (Munich, 2/1984), p.450, and translated by Ardal Powell in an as yet unpublished manuscript.

²⁸For a discussion of the development of this type of instrument from the earlier three-piece one-key flute, see J. Bowers, 'New Light on the Development of the Transverse Flute between about 1650 and about 1770', *Journal of the American Musical Instrument Society*, iii (1977), pp.5–56.

²⁹J. H. van der Meer, *Germanisches Nationalmuseum Nürnberg: Wegweiser durch die Sammlung historischer Musikinstrumente* (Nuremberg, n.d.), p.35

³⁰This is described in part by Richard Shepherd Rockstro, *A Treatise on the Construction the History and the Practice of the Flute . . .* (London, 2/1928; R/1967), pp.151–2.

³¹For Potter's patent, see Rockstro, *Treatise*, pp.253–4. Rockstro points out that there was nothing original in the patent, unless the covering and the numbering of the tuning slide can be considered so.

³²These instruments are in the Musikinstrumenten-Museum at Karl Marx University in Leipzig and the Gemeente Museum in The Hague. See P. T. Young, *Twenty-five Hundred Historical Woodwind Instruments: An Inventory of the Major Collections* (New York, 1982), p.43, and Young, 'Inventory of Instruments: J. H. Eichentopf, Poerschman, Sattler, A. and H. Grenser, Grundmann', *GSJ*, xxxi (1978), p.116.

³³On the Grensers, see 'Grenser', *Allgemeine deutsche Biographie* (Leipzig, 1892), which is reproduced in Schultze, *Querflöten*, p.490; F. A. Drechsel, 'Zur Geschichte des Instrumentenbaues in Dresden', *Zeitschrift für Instrumentenbau*, ii (1928), pp.995–1000; P. Rubardt, 'Grenser', *MGG*; and the two Young sources cited in the previous note.

³⁴van der Meer, *Germanisches Nationalmuseum*, pp.57, 61

³⁵Young, *Twenty-five Hundred Instruments*, p.55

³⁶P. T. Young, *The Look of Music: Rare Musical Instruments, 1500–1900* (Vancouver, 1980), pp.141–2. In a personal communication, David Shorey has suggested, however, that Heinrich Grenser's instruments demonstrate a new approach to flute making. His first known instrument turned in the new style is one in a private collection in Bremen which appears to date from 1789 (the box is dated 1789). According to

Shorey, Heinrich's most common sort of flute is made of ebony and has a rather oval mouth hole.

³⁷One useful model for the detailed description of flutes is presented in H. Heyde, *Musikinstrumenten-Museum der Karl-Marx-Universität Leipzig. Katalog, i: Flöten* (Leipzig, 1978). From his detailed descriptions of individual flutes, Heyde is able to generalize about the differences in bore size (of both head and middle joints), size and placement of tone-holes, volume and type of sound between flutes of different makers and schools (Grenser, Koch, Kirst school, south German tradition etc.), when their instruments are in the Leipzig collection. However, his generalizations are confined to German flutes for the 18th century (pp.23–5).

³⁸These makers include Ardal Powell, Friedrich von Huene, Rod Cameron and Catherine Folkers. I wish to thank all of them for sharing the results of their study so generously in personal communications with me. Since I am generalizing here about matters about which each contributed a somewhat different perspective, I apologize if I have in any way misrepresented their statements. I also wish to thank Thomas Boehm, Thomas Prescott, David Shorey and John Solum for generously sharing their valuable observations about old instruments with me.

³⁹Personal communications from Cameron, von Huene and Powell

⁴⁰The maker M. Schwaiger of Salzburg by whom there is a one-key flute in the Museum Carolino Augusteum in Salzburg (no.63 [Geir.257]) lived in the mid-19th rather than the 18th century, according to K. Birsak, *Die Holzblasinstrumente im Salzburger Museum Carolino Augusteum: Verzeichnis und entwicklungsgeschichtliche Untersuchungen* (Salzburg, 1973), pp.29, 62.

⁴¹Birsak, *Holzblasinstrumente*, pp.29, 63, 82. The flute is depicted in table III.

⁴²See especially H. Heyde, *Historische Musikinstrumente im Bachhaus Eisenach* (Eisenach, 1976), pp.203–5. According to Friedrich von Heune, the head joint of this flute has a large bore.

⁴³G. Hart, 'Die Holzblasinstrumentenmacher Eisenmenger: Ein Beitrag zur Geschichte des Mannheimer Musikinstrumentenbaues', *Mannheimer Hefte* 1961, ii, p.42

⁴⁴An inventory made after Dejean's decease listed a flute but gave no details.

⁴⁵The letters describing Leopold's transaction with Grenser are dated 7 February 1772 (where Leopold mentions two oboes and two bassoons, but all later letters confirm that it was oboes and English horns that were ordered), 16 August 1776, 13 December 1776, 11 April 1777, 13 March 1778, 6 July 1778, 4 October 1778, 29 April 1779, 10 August 1781 and 29 April 1782. They are reproduced in *Mozart: Briefe und Aufzeichnungen, Gesamtausgabe*, i–iii.

⁴⁶For example, a Jacob Denner flute with two foot joints, one of standard length with one key, and a longer foot joint that extended the range of the instrument downwards by a whole tone and was supplied with two keys. See C. Sachs, *Sammlung alter Musikinstrumente bei der Staatliche Hochschule für Musik zu Berlin: Beschreibender Katalog* (Berlin, 1922), p.255.

⁴⁷Personal communication from Darcy Kuronen at the Museum of Fine Arts, Boston

⁴⁸I wish to thank various staff members at the Chicago Historical Society for providing me with information about this flute. The head joint is marked 'Potter Senior' while the foot joint is stamped with both this name and the date 1776. Like the Potter flute pictured in illus.6, this instrument has *b*[♭] and *g*[♯] keys located on the upper middle joint, an *f*[♯] key on the lower middle joint, and *e*[♭], *c*[♯] and *c*[♭] keys on the foot joint. The flute is made of dark wood with ivory bands.

⁴⁹On the duke's ambassadorship to London, see Abert, *W. A. Mozart*, i, p.578, and M. Flothuis and F. Vester, Liner notes, *Wolfgang Amadeus Mozart: Complete Flute Concertos on Original Instruments*, Pro Arte 2PAL-2004 (1980).

⁵⁰See bars 151–2 and 157–8 in the first movement, bar 98 in the second and bar 369 in the third.

⁵¹Review of Tromlitz's book, *Über die Flöten mit mehreren Klappen*, in *Intelligenz-Blatt zur Allgemeinen musikalische Zeitung*, ii, no.11 (March 1800). Quoted from an unpublished translation by Ardal Powell.

⁵²'Hr. J. F. Boye in Göttingen (auf der Allee wohnhaft) bietet verbesserte Flöten, die er nach den Meisterstücken Grenser's in Dresden und Potters in London verfertigt, an . . .' Reproduced from the *Berlinische musikalische Zeitung: Historischen und kritischen Inhalts*, ed. C. Spazier (Berlin, 1794) in Schultze, *Querflöten*, p.446.

⁵³In *Musikinstrumenten-Museum*, p.24, Heyde characterizes Grenser flutes as having a very loud volume and covered sound, although with later instruments also a fuller and more open sound.

⁵⁴One flute by Theodor Lotz, who worked in Pressburg and then Vienna before his death in 1792, is in the National Museum in Prague (no.1362E). No information appears to be available about the nature of this instrument, however. On Lotz see Haupt, 'Wiener Instrumentenbauer', p.158, and L. G. Langwill, *An Index of Musical Wind-Instrument Makers* (Edinburgh, 61980), p.110. The flute is listed in *Museum of Musical Instruments: Catalogue of the Permanent Exhibition . . .* (Prague, 1973), p.37.

⁵⁵H. Haupt, 'Wiener Instrumentenbau um 1800' (Ph.D. diss., U. of Vienna, 1952), app., p.70. See also Haupt, 'Wiener Instrumentenbauer von 1791 bis 1815', *Studien zur Musikwissenschaft*, xxiv (1960), p.142

⁵⁶Haupt, 'Wiener Instrumentenbau um 1800', app., p.71. The only extant flute of Hammig's described in print seems to be a one-key flute d'amour in Linz. See *Die Musikinstrumentensammlung des Oberösterreichischen Landesmuseums*, ed. O. Wessely (Linz, n.d.), p.45.

⁵⁷Haupt, 'Wiener Instrumentenbau um 1800', app., p.64, and Haupt, 'Wiener Instrumentenbauer', pp.142–3. Wesseley, in *Musikinstrumentensammlung*, p.44, lists two flutes in Linz marked 'HARRACH/WIEN', one with five keys and one with six; however, Langwill, in *Index of Wind-Instrument Makers*, p.73, ascribes them to Melchior Harrach, the son of Franz.

⁵⁸Haupt, 'Wiener Instrumentenbau', app., p.94

⁵⁹Young, *Twenty-five Hundred Instruments*, pp.72–3. On Koch see Haupt, 'Wiener Instrumentenbauer', p.152.

⁶⁰Smith takes up the case of Andrew Ashe—to whom John Sainsbury accorded a lengthy biography in *A Dictionary of Musicians from the Earliest Times* (London, 1825; R/New York, 1966), pp.43–6—in order to demonstrate that Ashe, who played a six-key flute, replaced Graeff, the principal flautist engaged by Salomon in 1791, who played 'upon a Flute not of the new construction', as Salomon's preferred flautist at concerts in London during the course of the early 1790s. She states, 'Because Ashe displaced Graeff as Salomon's preferred performer, this series of clippings seems to document the move, in one orchestra, from the use of the one-keyed flute to the flute with more keys.' C. Smith, 'Changing Use of the Flute and its Changing Construction, 1774–1795', *American Recorder*, xx, no.1 (May 1977), p.6. For whatever it is worth, Sainsbury's biography of Ashe states that he took a few lessons from Wendling around 1775, who 'on his second visit . . . told him his new flute was a bad one, that the long keys on the bottom joint spoiled the instrument, and that the small keys were of no use, particularly in quick passages.'

