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Bow

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Bow

(Fr. *archet*; Ger. *Streichbogen*; It. *arco*).

A flexible stick of wood or a tube (bamboo) held under tension by a string or strings, usually of horsehair, used to draw sound from a string instrument.

I. History of the bow

1. Origins.

The use of the bow can be traced back to the 10th century, when the bow was known throughout Islam and in the Byzantine empire. No evidence has been found either in the parts of Europe not then under Byzantine or Arab rule, or in eastern and south-eastern Asia, of string instruments which were bowed before the year 1000. Theories of a north European or Indian origin for the bow have proved groundless. The bow is frequently mentioned in 10th-century literature and is clearly depicted in a number of illustrations. The majority of references in Arabic literature come from important scholars and competent authorities on music, such as Al-Fārābī, Ibn Sīnā, Ibn Zayla and Ibn Khaldūn. In connection with the classification of chordophones 'whose strings are made to sound by rubbing them with other strings [*awtār*] or a string-like fabric', these writers mentioned instruments 'whose notes can be prolonged [*mumtadd*] and combined [*muttaṣil*] at will'.

The available sources indicate that bowing originated in central Asia. At the time, rods for plucking, beating or rubbing the strings were used as well as the bow to produce sound from chordophones. The hypothesis of the central Asian origin of the bow is supported by a mural in the palace of the governor of Khuttal at Hulbuk (now Kurbanshaid, south Tajikistan). Among other subjects, it shows women playing musical instruments, among them a bowed string instrument. Since this palace was destroyed in the 11th century, and the mural was whitewashed over at the end of the 10th, the painting must date from the 10th century at the latest. Several 10th- and 11th-century Byzantine illustrations show string instruments – with the strings attached to a transverse string-holder and arranged in a fan formation, with lateral pegs being used in conjunction with extremely long bows.

Werner Bachmann

2. The bow in Europe to *c*1625.

The bow was first introduced into Europe in the 11th century via Islamic Spain and Byzantium. The earliest occidental references to it are in miniatures from northern Spain and Catalonia, dating from the first half of the 11th century. By 1100 the bow was used throughout western Europe. The oldest bow that has been preserved, although only in a fragmentary state, dates from the middle of the 11th century. It was found during excavations at Christchurch Place in Dublin, together with the tuning pegs of a string instrument. The wooden stick, broken off at the handle end, is 57 cm

long and shows the bow to have been convex. It runs in a slight curve from the break and is distinctly bent towards the tip, where there is a notch. The horsehair stringing would have been fixed to the stick at the notch with a knot.

The bow in the early centuries, up to about 1600, had certain characteristics common to all specimens, notwithstanding the great variety of forms. Bows were always convex, like drawn hunting-bows. The hair, which was horsehair or a 'string-like material', was strung on a shaft of elastic wood or bamboo, bent in an arc. The bowstick was much weaker than on modern bows, so the hair gripped the strings less firmly. The hair was affixed directly to the stick, not to an adjustable nut which would have permitted alterations to the tension. Iconographic sources have yielded a great variety of bow shapes from around the end of the 10th century, ranging from the large, strongly arched, almost semicircular bow, held in the middle of the stick as in fig.1 [not available online], to the flat bow, hardly curved at all, with its hair almost touching the wood. The curve of some bows described a uniform arc; others were sharply curved at one end but otherwise fairly straight. There were also bows whose stick extended well beyond the end of the hair; this projection served as a handle and in early specimens was often exactly the same length as the part used for bowing. In some illustrations the hair of the bow is apparently no more than about 20 to 30 cm long, allowing only very short bowing movements, while in others the bow has a total length of more than twice that of the instrument and is manipulated chiefly with the arm at full stretch. The pictorial sources thus demonstrate that many different types of bow were tried out in the 10th and 11th centuries; this experimentation suggests that the bow was then at an early stage of its development, lacking forerunners. It was not until the late Middle Ages that uniform types gradually evolved, between 50 and 80 cm long and moderately curved. Where there was no projecting handle the player held not only the stick but also the end of the hair, and was therefore able to vary the tension of the bow while playing by pressing the hair with the fingers. In order to keep the hair and the stick apart on the flat type of bow, various forms of (non-adjustable) nut were introduced from the 13th century onwards: a natural bifurcation of the wood could be exploited, one of the branches being cut down to a stump; or the player could insert a piece of wood or a finger between the hair and the stick, a method illustrated as early as the 11th century. Until the 14th century the bow was generally held in the clenched fist, which made for a powerful stroke and greater pressure on the strings but precluded a loose wrist and therefore elasticity at the change of stroke. Illustrations of the bow being held with the fingertips occur as isolated instances at first, and become more frequent only in the late Middle Ages. There is a distinction to be made between the grip at some point along the stick and that at the very end of the stick: the former is found principally with the strongly arched semicircular bow; but the latter, ensuring to a certain degree the evenness of stroke essential when the instrument has more than one string, gradually prevailed in Europe as the less arched bow came into general use. Almost without exception the instrument was held in the left hand and the bow in the right, as is usual today. Certain norms developed at an early date in the method of holding the instrument and in the technique of bowing. When the player held the instrument slanting upwards or sideways from the body the bow was held in an overhand grip, but when the instrument was supported on the knee (*a gamba*), the bow was held in an underhand grip. A common exception to this rule was that when the bow was strongly curved it was often held overhand, even if the instrument was supported on the knee. Occasionally, when the instrument was held with the strings almost vertical, the underhand grip was also found, principally in 10th- to 12th-century Byzantine illustrations.

Research has shown that the spread of bowing in Europe can be linked with the widespread medieval convention of bourdon accompaniment or with parallel organum or very early forms of medieval polyphony. The construction of the medieval fiddle with its bridge meant that the bow generally produced sound from more than one string at a time; the bourdon strings accompanying the melody created a drone background. The principle behind the sound production of the fiddle and that of the hurdy-gurdy was thus the same in the early phases. Only with the further evolution of bowing technique did the separate sounding of individual strings and the differentiation of angles in the bow's movement gradually develop. The polyphonic playing of string instruments was, however, still widespread during the Renaissance, at least on the *lira da braccio*, contributing to the development of chordal polyphony; this kind of playing required bows with a relatively wide gap between the hair and stick, a characteristic of both types of bow illustrated in the 15th and 16th centuries (i.e. the bow with strongly curved stick and the type with a flatter arc and a nut).

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3. *c*1625–*c*1800.

By about 1625 players began to require weightier bows for crisper articulation, increased volume, and a more complex sound. Iconographic sources indicate that until then the hair was attached at the point as it still is in traditional bows of many cultures: it was slipped through a hole or slit, then knotted and wrapped, as shown in Guido Reni's *St Cecilia Playing the Violin* of 1606. Probably about 1625, the point was thickened into a ‘pike’ head, the hair knotted and curled inside a rectangular (or later, trapezoidal) mortise cut in the head, secured by looping over a snugly fitting wooden plug.

At this time, bows were generally constructed of tropical hardwoods; the few extant 17th-century bows are all made of snakewood (specklewood, letterwood; Lat. *piratinera guianensis*), a remarkably dense, strong and beautiful material. Ebony and ironwood bows from the 18th century are extant, but although these woods are dense, their elasticity necessitates exaggerated thicknesses and weights to strengthen them; they seem to have been reserved for the appropriately heavier bows intended for use on large instruments.

17th-century iconography reveals an aesthetic preference for matching the lengths of bows with their instruments. Representations of bows for violone, cello and bass viol seem substantially longer than later examples, although with actual bows adherence to the aesthetic was limited by practicality. *Braccio* instruments and their bows, however, were often conveniently matched, as, for example, in Peter Lely's *Man Playing a Violin* (late 1640s) and a *vanitas* by Pieter Claesz (*c*1597–1660). A rare late 17th-century violin bow is 58 cm in total length; another extant short bow, of a later date, is just over 64 cm in length, roughly the outer limit for this type of violin bow (Powerhouse Museum, Museum of Applied Arts and Sciences, Sydney, Australia). Hawkins, in his *General History* of 1776, observed that the ‘sonata’ bow as late as 1720 was about 24 inches (61 cm) in total length, the ‘common bow’ even shorter. While it is impossible to generalize about the weights of short bows, extant examples weigh between 37 and 42 grams.

The hair was attached at the shank of the stick with a second mortise, and a removable frog (nut) separating the stick from the hair was fitted to a depression carved in the stick and held in place by hair tension. Although it precluded fine adjustments of hair tension, this method nevertheless seemed perfectly adequate; some adjustment could be made by placing slips of paper or other material between hair and frog. Early experiments with tension-regulating devices, such as the dentated *crémaillère*, where the frog is attached by a metal loop to a small ratchet affixed along the top of the stick (see fig.11*b* below) seem not to have generated much interest until much later. (The date of 1694 on the eyelet-and-screw frog of a well-known bow formerly in the Hill collection in London is spurious.) On the few surviving 17th-century bows that retain their original frogs, the hair channel measures as much as 8 mm.

To circumvent perceived lack of responsiveness in the upper portion of a pike-head bow, where the distance between the hair and the stick was small, the stick was often heated and bent (or perhaps carved) slightly outward in its uppermost few centimetres. The resulting increased distance between hair and stick made the bow very flexible and responsive throughout its length, lending weight to the advice in Bartolomeo Bismantova's *Compendio musicale* (1677–9) that ornaments are best played with separate bowstrokes at the tip of the bow. In any case, with the frog ‘clipped’ in place under playing tension, 17th-century bows appear somewhat convex.

Performers were evidently satisfied with the short violin bow well into the 18th century. However, about 1720, reportedly at the instigation of Tartini, Italian luthiers developed a substantially longer violin bow, between 69 and 72 cm in total length and generally weighing between 45 and 56 grams. In another modification later credited to Tartini as well, the mild convexity near the tip was replaced by a slightly more elevated head, frequently resulting in a distinct ‘swan-bill’ profile, while the stick remained straight; however, Tartini's long bow, although straight, has a small, somewhat elevated pike head rather than a ‘swan-bill’ (Conservatorio di Musica Giuseppe Tartini, Trieste). The new bows were known as ‘long bows’, sometimes as ‘Tartini bows’. Under playing tension, long bows still always appear slightly convex; moreover, many 18th-century long bows were still

built with low pike heads, or even swan-bill heads, that retain the convex 'hump' at the upper end of the stick. Not infrequently the shank of the stick was reeded – that is, carved with up to 24 shallow, narrow flutes – either for better grip, or for decoration. The bow in fig.2*b* [not available online], probably of English provenance, *c*1725, is 71·7 cm long and weighs 54·5 grams; its original 'clip-in' frog is intact, and the grip area and end of the stick are reeded.

Long bows did not supplant the short bows. G.B. Somis (1686–1763), a disciple of Corelli (1653–1713), continued to use a short bow; and P.A. Locatelli (1695–1764), arguably the most brilliant virtuoso of the 18th century, was reported by English observer Benjamin Tate in 1741 to be adamant in his preference for the short bow, perhaps because its greater ease of handling and quicker response complemented his fiery performance style. The slight sagging of the long bow on initial string contact suited the prevailing 18th-century italianate cantabile style and continuous on-string passagework, but not certain types of crisp articulation.

In an effort to reduce their mass without a compromise in strength, long bows, not infrequently, had their upper two thirds fluted; a number of fluted 18th-century examples are extant. Many of these show few signs of use, their preservation possibly due to their craftsmanship or costly materials rather than their playing characteristics. Indeed, the prevailing perception of bows as accessories meant that most ordinary, if well-playing, short and long bows were ultimately discarded, while aesthetically pleasing long bows survived without regard for their musical efficacy. Fluted bows never seem to appear in iconographical sources; perhaps their reduced mass also reduced their richness of sound or stability, diminishing their attractiveness to professional players. Indeed, short bows, invariably unfluted, had achieved increased strength and reduced mass with a stick that was slightly higher than wide; it was carved with an oval cross-section in its verticle axis.

The short bow continued in common use until at least 1750. Catalogues of mid-18th-century luthiers still include them, and many 18th-century paintings show them in use, among them Carle Vanloo's *Sultan Giving a Concert to his Mistress* and Hogarth's *Enraged Musician* (1741), whose principal figure was identified by Charles Burney as the virtuoso violinist Pietro Castrucci. Still, the long bow eventually did replace the short bow, at least for most soloists: J.-M. Leclair performed with a long bow; so did F.M. Veracini, as illustrated on the frontispiece of his *Sonate accademiche* of 1744. The aesthetic of matching instrument and bow lengths was abandoned: bows for viola, cello and bass viol were now shorter than those for violin.

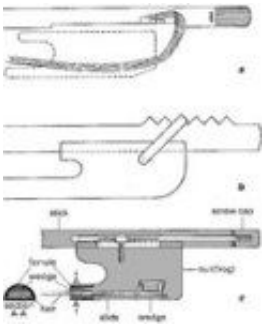
While the 'clip-in' frog was still adequate for most players, some evidently felt that the increased hair span of the long bow made it more sensitive to changes in humidity and that it required a means of implementing minute hair-tension adjustments. The screw-adjustable frog and eyelet, with the hair inserted into a mortise cut in the frog's hair channel rather than the stick itself, probably made its appearance about 1740. However, most long bows, and even the transitional/classical types that began to appear by about 1760, were still built with clip-in frogs for several decades: two bows owned by Tartini (Conservatorio di Musica Giuseppe Tartini, Trieste), one long bow and one transitional type have such frogs. Small adjustments of hair tension were apparently not deemed critical enough for most mid-18th-century players to consider the added expense of the screw frog. Moreover, early eyelets may not have been reliable, their few threads stripping after modest use. As is the case with short bows, the frogs on many extant long bows have wider hair channels than was once assumed: 8·5 mm is not unusual. Probably during the third quarter of the 18th century, a number of clip-in long bows were re-cut to accept screw frogs. A well-known example is the elaborate pandurina-shaped frog, probably of French provenance, *c*1770, on an anonymous fluted long bow, *c*1740 (Music Department, University of California, Berkeley). This bow was erroneously dated *c*1700 and attributed to Antonio Stradivari; its stick, probably of ironwood, was formerly thought to be pernambuco.

The long bow persisted until the end of the 18th century, overlapping with the transitional/classical bows. Transitional bows continued the long bow's pattern of development in further raising the head, creating 'hatchet' or 'battle-axe' profiles, and not infrequently, a modified swan-bill head that was foreshortened and extremely high; a number of fluted transitional bows with the latter are extant. The stick was heated and bent strongly inwards to counter the extended distance between stick and hair, and to add spring and resistance. One occasionally encounters incurved high-headed transitional bows built with the old convex 'hump' near the head, for added flexibility in that area. Many transitional models are shorter than the long bows, usually lighter, despite thicker graduations, and frequently have narrower hair widths (compare figs.13*b* and *c* below), although

as the century progressed they became longer and heavier with wider hair channels. Pernambuco and, less commonly, ironwood were generally used for these thicker concave sticks rather than snakewood: pernambuco because it is lighter, ironwood because it is less stiff. The elasticity of these materials could be circumvented by the inward *cambre*, and pernambuco was also less expensive than snakewood.

In his *Méthode pour le violon* (*c*1798), the Parisian violinist Michel Woldemar (1750–1818) presented four accurate illustrations tracing the history of the bow: short ('Corelli'), long ('Tartini'), transitional ('Cramer') and Tourte ('Viotti'). Reputed to own bows of each type, Woldemar claimed that the model associated with the virtuoso Wilhelm Cramer, active in London during the 1770s and 80s, was 'adopted in his [Cramer's] time by a majority of artists and amateurs'. With mirrored peak and throat on its 'battle-axe' head, and a delicate ivory frog of typical French design, similarly hollowed on both sides, the 'Cramer' bow is one of many extant variations by builders working in Paris and London, the two centres of bowmaking: in Paris, Duchaine, Tourte (*père*) bows stamped 'Tourte L.', and 'Meauchand', among them; in London, Edward, John and James Dodd, Thomas Smith, and others. Few bows of the period were stamped, those stamps that exist were as likely to identify firms for which the maker worked, especially in Britain, such as 'Banks', 'Betts', 'Forster', 'Longman & Broderip' and 'Norris & Barnes'.

The bounced bowstrokes in music of the Mannheim school, Haydn, Mozart and their contemporaries seem to have been responsible for the introduction of springy transitional bows, which performed these effects more naturally than long bows. Interestingly, a transitional bow of about 1770, attributed to Tourte *père*, is yet another ascribed to Tartini's ownership; if he was indeed its owner, he acquired it at the end of his life. However, it is the long bows, which smoothly sink into the string, that are better suited to what Hubert Le Blanc, in his *Défense de la basse de viole* of 1740 recognized as the Italian violinist's 'endless stream of seamless bow changes'. A pen-and-wash drawing (*c*1800), shows G.B. Viotti, widely – if anecdotally – considered the early champion of the new François Tourte bow, holding what appears to be a long bow with a swan-bill head. Many surviving long bows had inward *cambre* added at a later date, presumably to facilitate bouncing strokes, but they ultimately fell into disuse with the radical changes in musical style in the late 18th century. With the late 20th-century interest in period-instrument performing practice, surviving long bows have been widely copied, although usually constructed with an inward curve that regrettably masks their genuine responses and strengths.



Three methods of tightening the bow hair: (a) clip-in or...

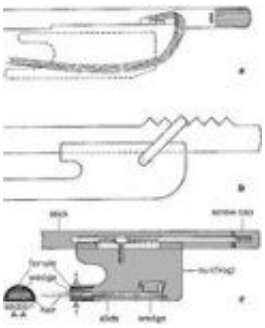
The model of François Tourte originating in the 1780s, is, at 74 or 75 cm, 2 to 4 cm longer than either long bows or many transitional bows. With even stronger graduations and *cambre*, and a closed frog with slides and a metal ferrule (figs.3*c* and 4*c* [not available online]), it is, at 56 to 60 grams, slightly heavier than some of the long bows; the 'hatchet' head is similar to transitional models, but without mirrored peak and throat. Although this model eventually eclipsed all previous types, various transitional designs were made well into the 19th century throughout Europe, notably by the many members of the Dodd family in England. Cost was generally the motivation: frogs with mother-of-pearl slides and silver ferrules are more expensive to produce than plain open-channel ones. A Bégas lithograph of *c*1820 clearly shows Paganini using a transitional bow of the Edward Dodd type, with a 'battle-axe' type head.

Robert E. Seletsky

4. The Tourte bow.

About 1785 François Tourte (1747–1835) succeeded in producing in Paris a bow so remarkably satisfactory that it became the model in his own time and, with a few changes of detail, has continued as such. The superiority of Tourte's bows was acclaimed by Louis Spohr (*Violin-Schule*, 1833), who spoke of 'the trifling weight with sufficient elasticity of stick', of 'the beautiful and uniform bending, by which the nearest approach to the hair is exactly in the middle between the head and the frog' and of 'the extremely accurate and neat workmanship'. In effect Tourte

combined the significant innovations of the transitional bows – including the concave bowstick and the higher, more massive head – in a final form that joined supreme playing qualities to incomparable grace. Although a legend in his own lifetime, he never stamped his bows; in a few cases he inscribed his name, age and the date on a piece of paper inserted in the slot holding the frog.



Three methods of tightening the bow hair: (a) clip-in or...

According to Fétis, Tourte fixed the length of the violin bow at 74 to 75 cm, the playing hair at 65 cm and the balance point at 19 cm above the frog. The viola bow was slightly shorter (74 cm); and the cello bow shorter still: overall length 72 to 73 cm, playing hair 60 to 62 cm and balance point 17·5 to 18 cm above the frog. The weight of a violin bow averaged about 56 grams, and the thicker viola and cello bows weighed correspondingly more. Tourte's bowsticks, invariably of pernambuco wood and finished as round or octagonal, tapered slightly from frog to head, being slimmer at the head end (for a mathematical formulation see Fétis, pp.125ff). He achieved the concave curvature by heating the stick completely through and then bending it while hot, rather than by cutting at once to the desired bend. The band of hair was widened to about 1 cm and comprised 150 to 200 hairs from white horses. To prevent it from bunching into a round mass, Tourte (according to Fétis, at Viotti's suggestion) spread the hair into a uniform ribbon by means of a ferrule, generally of silver; he covered the surface from the ferrule to the end of the frog with a mother-of-pearl slide (Fr. *recouvrement*). Although claimed as Tourte's innovation, the ferrule and slide had probably been introduced earlier. (The details of the modern frog and its mechanical action of tightening the hair are shown in **fig.3c**, from which may be noted the rectangular form of the frog – generally made of ebony – and the squared-off screw button.)

Tourte selected a hatchet form of head, facing it with a protective plate, generally of ivory. The 'hatchet' head was heavier than the earlier 'pike's' head or even than most transitional designs; balance was restored at the frog end by the extra weight of the metal ferrule and by the added weights of the inlay ('eye') of the frog, the back-plates and the screw button. Even so, the balance of the Tourte bow was farther towards the centre of the bow than in earlier examples. Tourte and his followers also adorned their best bows by using such precious materials as tortoiseshell for the frogs, gold for the ferrule, back-plate and screw button, and occasionally mother-of-pearl for the face of the head.

John Dodd (1752–1839), Tourte's contemporary in London, was likely aware of the pioneering work of the Tourte family. He may have perfected the bow about the same time as François Tourte, arriving at very similar solutions. Dodd's bows, however, are not of such uniformly high quality, and many of them are slightly shorter. To judge by the text and the bows illustrated in Baillot, Viotti may have used a Dodd bow about 2·5 cm shorter than the Tourte model.

Only one later addition to the Tourte bow proved of functional importance: the underslide (Fr. *coulisse*), a piece of metal affixed to the part of the frog that comes in sliding contact with the bowstick, its purpose being to minimize wear from friction and to reinforce the delicate edges. Tourte had left this surface of the wooden frog without protection; the invention of the underslide is generally attributed to François Lupot (1774–1837).

The 19th century produced a vast number of distinguished bowmakers; among the most celebrated were Dominique Peccatte, F.N. Voirin, Lupot, Maire, Pageot, Persois, Henry and Simon in Paris, and the Dodd and Tubbs families in London. In Germany Ludwig Bausch attained sufficient fame to be called the 'German Tourte'.

Both Peccatte and Voirin worked at first for J.-B. Vuillaume, the most celebrated French violin maker and dealer of the early 19th century. Many of the early bows of Peccatte and Voirin (among others) were stamped with the name of Vuillaume, who while not a bowmaker himself spent much time studying Tourte's work so that he was able to direct the work of his own makers. Vuillaume also invented new models, such as his hollow-steel and self-hairing bows, neither of which proved of lasting importance. Bowmakers after Tourte (such as Peccatte, Henry, Persois and Maire), while otherwise generally adhering to the Tourte model, tended to make the bowstick about 1 cm longer, and aimed at 60 grams as the ideal weight.

David D. Boyden/Jaak Liivoja-Lorius

5. Double-bass bows.

Double-bass bows: (a) French or Bottesini bow; (b) German or…

The double-bass bow is sometimes constructed like a modern cello bow and sometimes like a combination of cello and viol bow. The cello-type bow, played 'overhand', is called the 'French' or 'Bottesini' bow (after a renowned player). It has the concave curvature, modern frog and 'hatchet' head of the cello bow, although the stick is thicker, heavier, somewhat shorter and more sharply curved inwards (fig.5*a*).

Double-bass bows: (a) French or Bottesini bow; (b) German or…

The other type of bow is called the 'German' or 'Simandl' bow (after a famous Viennese teacher; fig.5*b*). A combination of the French bow and the early viol-type bow (the 'Dragonetti', now obsolete), the 'Simandl' uses the modern 'hatchet' head and the incurve of the French bow but with a greater space between hair and stick at the frog, which is also somewhat different. The 'Simandl' bow and its predecessor the 'Dragonetti' were never played underhand like the early viol, but were grasped endways, almost like a saw, the palm enclosing the frog so that the two middle fingers went round the frog parallel to the stick, the little finger below the slide, the forefinger below the stick, and the thumb resting above and exerting pressure on the stick (fig.6).

The French and German double-bass bows were both introduced relatively late in the 19th century.

David D. Boyden/R

6. The 'Bach' bow.

Modern 'Bach' bow, made by Knud Verstergaard, Viby, Denmark

In the 20th century a so-called Bach bow was created to play the Bach solo violin sonatas and partitas 'precisely as written'. This goal was based on the misconception that the chords in these works were intended to be sustained as written. The existence of a highly arched bow on which the hair could be loosened and tightened was postulated by Arnold Schering and Albert Schweitzer at the beginning of the century and such a bow was built by Rolf Schröder in 1933. It is of very high arch, as much as 10 cm separating the bowstick and the hair at the highest point. By a mechanical lever, worked by the thumb, the player can tighten the hair at will to play on individual strings and loosen it to encompass all the strings, thus sustaining multiple stops continuously (fig.7).

David D. Boyden/R

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II. Bowing

1. Distinctive aspects of bowing before Tourte.

Although the violin bow changed markedly between about 1600 and the second half of the 18th century, there are two features common to all bows from this period which have a direct impact on the way they are used and consequently on the sounds they produce. First, the distance between bow hair and stick is less at the point than at the heel. It follows from this that such bows have a lighter head than late 18th-century models, a balance point which is closer to the player's hand, and a convex stick – or at least one which is predominantly so. (Many early 18th-century bows have quite complex curves.) Secondly, no pre-Tourte bow has a ferrule (that is, the band of metal – usually silver – which clamps the hair as it passes out from the frog).

The first of these features means that the tendency for up-bows to be lighter than down-bows is considerably more marked on early bows than on a Tourte-style bow. (As we shall see, it is one of the achievements of late 18th-century bow design that it becomes a relatively simple matter for players to disguise the difference between up- and down-bows.) The second feature, the absence of a ferrule, means that there is nothing to hold the ribbon of hair flat if pressure is exerted at the heel while the bow is held at a slight tilt. This makes it unsuitable for modern-style *martelé* (see §II, 3(v) below).

To put this in a more positive way, early bows serve an expressive ideal which places great value on an articulate and inflected bowing style. The concepts on the one hand of a seamless legato with inaudible bow changes and on the other of a sudden attack with an initial hard 'consonant' seem to have no place in 17th- and 18th-century music.

Ways of holding the bow are described in a number of sources. In the early Baroque period, the thumb was placed on the hair at or near the frog. The change to placing the thumb on the underside of the stick was initiated by the Italians. In France, the thumb-on-hair method persisted into the 18th century; it is the grip described by Montéclair (1711–12). Not until Corrette's *L'école d'Orphée* (1738) is the thumb-on-stick grip offered as an alternative (and it is still identified as an Italian practice). According to Roger North, Nicola Matteis persuaded the English 'out of that awkwardness'; yet in 1693, 20 years after Matteis's arrival, John Lenton (1693) advocated holding the bow 'half under the nut [i.e. the frog], half under the hair from the nut'. The Italian bow hold may not have seemed such an obvious improvement to all who encountered it. Georg Falck (1688) describes the French grip in terms of its positive qualities, saying that it produces a good deep stroke.

The Italian grip is carefully discussed in terms of the subtleties of tone production by Geminiani

(1751), Leopold Mozart (1756), Herrando (1756) and L'abbé *le fils* (1761). What they describe is very different from the prevalent modern bowing style. All insist that the parts of the body closest to the bowstick are the most active; flexible wrist and finger movements are vital, then a freely moving lower arm and, finally, an upper arm which will become involved only in the broadest strokes. L'abbé *le fils* comments on the flexibility of the fingers which, he says, 'will naturally make imperceptible movements which contribute a great deal to the beauty of sound'. A low elbow which allows the weight of the arm to be brought to bear in a relaxed way is fairly consistently advocated in Baroque and Classical treatises. Lenton advises players to 'hold not up your Elbow, more than necessity requires'. The most precise statement about elbow position comes from Herrando who also stresses the role of the wrist, and lower-arm movement:

> "The right arm is raised naturally, the elbow separated from the body about the distance between the extended thumb and forefinger, without movement from the elbow up, for the movement must come from the elbow forward with freedom of the wrist and evenness in the bow."

Mozart, too, warns against a right arm that is held too high, and, like Herrando, refers his readers to the engravings in his treatise; the contrast in elbow positions between the 'good' and 'bad' pictures is marked.

The bow could be held some distance from the frog. Corrette claims that the Italians 'hold it three-quarters of the way down the stick'. Berlin (1744) says: 'imagine that the length of the bow is divided into three parts, and put your hand in the middle of the first part'. Geminiani advises players to use the whole bow 'from the Point to that Part of it under, and even beyond the Fingers', implying that the hand is not at the frog. Corrette, Herrando and L'abbé *le fils* all recommend tipping the bow slightly towards the fingerboard, but Mozart, typically concerned with achieving greater strength of tone, disapproves of this. For the same reason, he (and L'abbé *le fils*) advocate having the second or middle joint of the index finger (rather than the first joint) on the stick.

2. Bowstrokes to c1780.

(i) Preliminary definitions.

On instruments of the violin family, 'down-bow' (Ger. *Abstrich*; Fr. *tirer*; It. [*arcata*] *in giù*, *tirare*) refers to the action of pulling the bow downwards so that the point of contact moves from the frog towards the tip, whereas in an 'up-bow' (Ger. *Aufstrich*; Fr. *pousser*; It. [*arcata*] *in su*, *spingere*) the player pushes the bow upwards from the tip towards the frog. The down-bow is more heavily weighted than the up-bow, partly because of the downward force of gravity and partly because of the weight exerted on the bow stick by holding it from above by the hand in a palm-down position. The natural weight of the arm is also a factor. From the late 18th century to the late 20th, violinists have toiled to equate the aural effect of down-bow and up-bow when it is musically desirable to do so, but the natural difference in emphasis favours the use of a down-bow for an accented beat (or part of beat) and up-bow for unaccented ones. This distinction was embodied in the fundamental 'rule of the down-bow' formulated by the Italians in the late 16th century (see below).

These distinctions apply to all members of the violin family. The basic cello strokes, though still called down- and up-bow might more accurately be described as 'out-bow' (away from the player) and 'in-bow' (towards the player). While gravity contributes less to the strength of the down-bow on the cello than it does on the violin or viola, the overhand grip nevertheless ensures that the application of weight to the string is much more direct at the start of a down-bow (when the hand at the heel of the bow is directly above the string) than at the start of an up-bow.

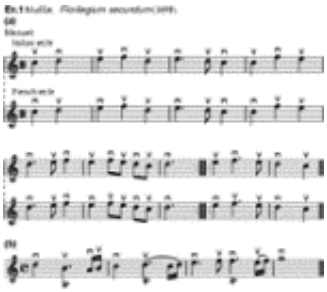
The viol bow is held underhand (*see* VIOL, fig.); the in-stroke and out-stroke are nearly equalized with respect to gravity and pressure. Viol players nevertheless consider the push (in-bow) stroke somewhat more naturally weighted than the pull (out-bow). Thus the principles of viol bowing run exactly counter to those of the violin family. This is recognized in the earliest treatises to consider

both families of instruments, and writers on viol playing from the late 16th century to the mid-18th give rules designed to produce push strokes (up-bows) in metrically stressed positions. (The viol's underhand grip was used by a number of cellists in the 17th and 18th centuries.)

(ii) The rule of the down-bow.

The earliest explanations of how to organize bowing enshrine the basic principle later to become known as the 'rule of the down-bow' – that strong beats should be played on down-bows. Riccardo Rognoni (1592) gave a few rules in the introduction to his treatise on diminution. His son Francesco developed these in his *Selva de varii passaggi* (1620). They and Gasparo Zanetti (1645) insist on placing down-bows on strong beats.

The rule of the down-bow dominates French bowing in the 17th century. It is neatly summarized by Mersenne in 1636, and it forms the basis for Lully's bowing principles which were so meticulously documented by Georg Muffat (1698). The most distinctive of the Lullists' ways of achieving a down-bow at the beginning of each bar is the use of a down-up-down/down bowing sequence in slow triple time as an alternative to the more facile down-up-up/down (to divide – *craquer* – the up-bow is possible at all but the very fastest of tempos). Muffat, in describing how Lully bowed a minuet, contrasts the strict adherence of the French to the down-bow principle with the Italians' greater willingness to use alternate bows in triple time (**ex.1*a***). According to Muffat, only fast courantes, gigues and canaries might be played by the French with continuously alternating bows. Of the rapid ornamental notes found so often at the end of a beat in the opening section of a French overture, Muffat says only that they can be bowed separately, or slurred 'for greater sweetness'. His brief example throws the whole question back on to the performers' taste (**ex.1*b***). The 'Rules' which make so much sense of this Versailles-court dance-orientated style, are corroborated by other writers, notably Montéclair (1711–12) and Dupont (1713). Dupont, described on the title page of his treatise as 'Maître de Musique et de Danse', stands in a tradition of violinist-dancing masters which goes back to the origins of the instrument.



Ex.1 Muffat: Florilegium secundum (1698).

Bow management in the later 18th century might be summarized as a very free interpretation of the rule of down-bow with various writers stressing that players needed to develop the ability to make up-bows sound strong when needed. Since Geminiani and Quantz both make this point, it clearly precedes (or at least goes hand in hand with) the development of a more substantial head to the bow.

(iii) Bowing inflections.

It seems that in the pre-Tourte era many players were concerned as violinists are today with producing a good strong tone throughout the length of the bow. Bremner (1777, see Zaslaw, 1979, p.46) passes on an old (but plausible?) anecdote about Corelli's demands:

> "I have been informed that Corelli judged no performer fit to play in his band, who could not, with one stroke of the bow, give a steady and powerful sound, like that of an organ, from two strings at once, and continue it for ten seconds."

The ability to play a long, even stroke was, according to Muffat, one which transcended national boundaries: 'all the finest masters, regardless of their nationality, agree with each other that the longer, steadier, sweeter, and more even the bow-stroke is, the finer it is considered'. Montéclair,

too, claimed that ‘it is essential first of all to get used to playing up- and down-bows evenly from one end of the bow to the other without making the string produce an ugly sound’. His words are echoed by Corrette (1738), Geminiani (1751) and Mozart (1756).

In this period, however, a basic element in producing a strong sound was to make the string speak without a percussive consonant at the beginning of the note. According to Mozart:

> "Every note, even the strongest attack, has a small, even barely audible, softness at the beginning of the stroke; for it would otherwise be no note but only an unpleasant and unintelligible noise. This same softness must be heard also at the end of each stroke."

The point is reinforced by Tartini (1771):

> "To draw a beautiful tone from the instrument, place the bow on the strings gently at first and then increase the pressure. If the full pressure is applied immediately, a harsh scraping sound will result."

As late as 1791 Galeazzi was giving similar advice about the basic bowstroke:

> "In guiding the bow across the strings, one must place it lightly at the very beginning of the stroke, gradually adding weight until the middle, and then again releasing the weight until the tip, in such a way that the volume of tone must be least at the ends of the bow and maximum in the middle. This rule must be inviolably observed not only in long notes and notes of like length but also proportionately in shorter notes. "

Interestingly this advice is retained in the 1817 second edition of his treatise, after the Tourte bow had gained widespread acceptance.

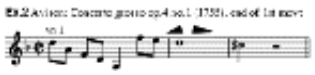
It is clear that the bow, to a much greater extent than in modern playing, became the primary source of expressive inflection. (This was true for viol as well as violin playing: Christopher Simpson (1659) talks about gracing ‘by the bow’ and Loulié (1700, see Cohen, 1966) describes the *enflé* or swell – a device indicated in Marais scores by the letter *e*.) The malleable quality of a violin’s sound is compared by Le Blanc (1740) with (among other things) clay on a potter’s wheel. Roger North also has some fine images for bowing of a kind which he says the Italians brought to perfection:

> "Learn to fill and soften a sound as shades in needlework, in sensation so as to be like also a gust of wind, which begins with a soft air and fills by degrees to a strength as makes all bend, and then softens again into a temper and so vanish. And after this to superinduce a gentle slow wavering, not into a trill, upon the swelling the note."

Geminiani (1751) calls this kind of dynamically modulated bowing ‘one of the principal Beauties of the Violin’.

There are a few more specific indications of how inflected bowing might be used. Matthew Locke’s storm music for *The Tempest* contains the directions ‘lowder by degrees’ and ‘soft and slow by degrees’. Piani (*Sonate* op.1, 1712), and Veracini (*Sonate accademiche* op.2, 1744) have prefaces explaining the use of signs for a swell, a diminuendo and a combination of the two. The swell sign features in Geminiani’s violin treatise, and in the earlier volumes *A Treatise of Good Taste* (London, 1749) and *Rules for Playing in a True Taste* (London, *c*1748). These signs were taken up and used by other French and English composers. Geminiani’s pupils Festing and Avison made extensive and generally straightforward use of them. Avison, for example, uses

combinations of these marks to show a natural phrasing off at cadences (ex.2). Sometimes the swell sign seems to require a rather unspecific interpretation, an expressive accent perhaps.



Ex.2 Avison: Concerto grosso op.4, no.1 (1755), end of 1st movt.

J.-B. Cupis, in his celebrated Menuet (before 1742), uses large versions of these signs to indicate that the swell or diminuendo may be spread over several bars.

William Hayes, Professor of Music at Oxford, was contemptuous of Geminiani's habit of giving specific ornament and phrasing instructions to performers, claiming that he was 'paying his Brethren of the String but an ill Compliment'. The attitude that, at best, explicit markings are patronizing may help to explain why they are found in relatively few scores.

(iv) Special bowings: problems of terminology and notation.

It has always been recognized that the violin's expressiveness is intimately connected with the way in which the bow is used. The kind of bowing – whether sustained, gently articulated under a slur, detached but on the string, or lifted – will determine the expresssive character of a particular passage. An accepted vocabulary for describing a standard range of special bowings was not finally consolidated until well into the 19th century. Terminology for bowstrokes in the 18th and (more particularly) the 17th centuries was, to say the least, unstable. The point can be illustrated by sampling some of the ways in which staccato notes played in a single up- or down-bow have been described. Francesco Rognoni (1620) described this as 'il lireggiare affettuoso', Muffat (1698) as a *pétillement* ('crackling'), Piani (1712) as 'notes égales et articulées d'un même coup d'archet' (repeated verbatim by Corrette in 1738), Herrando (1756) as *picada* ('pricking or biting'), while L'abbé *le fils* (1761) called it a 'coup d'archet articulé', an expression applied by Bailleux (1779) to an ordinary detached stroke. Galeazzi describes it as 'note picchettate' and adds that many, believing that the technique was developed by Tartini, refer to 'note Tartiniate'. Cambini (1803) described it as *martellement* (a term which had already been used by L'abbé *le fils* and others for a mordent). This lack of agreement about terminology can in some cases make it quite difficult to know whether a type of bowing now identified by a 19th-century label was in fact part of earlier violinists' expressive armoury.

The other aspect of this problem is that, historically, notation for special bowings has never been able to reflect adequately the range of distinctions described or implied by violin treatises. The choice of dots, dashes, strokes, daggers and squiggles on their own or combined with slurs can suggest to modern eyes a more precise notational vocabulary than is in fact the case. When in 1954 the Gesellschaft für Musikforschung ran a musicological competition for essays which could establish the significance of wedges, strokes and dots in W.A. Mozart's works they fuelled a long-standing debate which, if nothing else, demonstrates the impossibility of giving consistent, universally-applicable answers to these questions. In the musical examples below it is often the case that the same notation could imply a range of different bowstrokes.

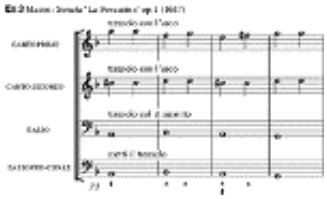
(v) Use of slurs.

Slurs (to indicate that more than one note is to be played in a single bowstroke) are relatively few and far between in early violin music, though this may tell us more about the limitations of movable type as a way of printing music than about performing practice. Gabriele Usper in a contribution to his uncle Francesco Usper's *Compositione armoniche* op.3 (Venice, 1619) writes 'ligate' explaining his placing of groups of four notes under a slur. Rognoni (1620) uses the term 'Lireggiare' to describe the technique of playing two, three, or more notes in a single bow (emphasizing that in order to do this successfully the player must save bow and exert pressure with the wrist). Uccellini makes frequent use of slurs, some spanning quite long groups of demisemiquavers. By the end of the century, with bows about one and a half times as long as those being used in the 1620s, players were taking sweeps of notes into a single bow. We see this captured on the engraved plates of the Roger edition of Corelli's *Sonatas* op.5 (1710), for example. Burney tells us, too, that Pietro Castrucci came in for a certain amount of ridicule for advertising in 1731 that, in one of his own solos, he would execute '*twenty-four* notes with one

bow' (*BurneyH*, ii, 770).

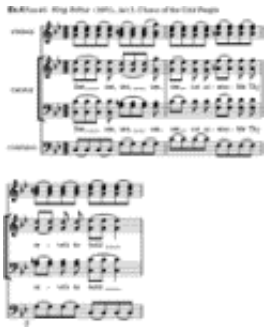
(vi) Tremolo.

Before the end of the 18th century the term *tremolo* is ambiguous. (It is, for example, one of the terms used for vibrato.) *Tremolo* is never used in the Baroque period to indicate a rapid reiteration of a single note with individual bowstrokes. Monteverdi does, of course, describe a measured version of this as a crucial device for projecting a sense of agitation in the *stile concitato*. But *tremolo* itself refers usually to the pulsing of the same note in a single bowstroke. It is used in this way by Gabriele Usper (1619) and Tarquinio Merula (*Canzoni da suonare à tre*, 1639). The name derives, it seems, from the resemblance of this effect to an organ TREMULANT. Marini's sonata 'La Foscarina' (1617) calls for a tremolo with the bow in the violin parts at the same time as the basso continuo player is instructed to engage the tremulant stop (ex.3). Farina has a 'tremulo' section in *Capriccio Stravagante* (1627) with a foreword directing the player to use a pulsating bow hand to imitate an organ tremulant (in the *basso* part 'Der tremulant' is given as a translation of 'Il tremulo'). Andreas Hammerschmidt's *Musicalischer Andachten dritter Theil* (1662) contains the direction 'play four notes in one stroke with your bow (like the tremulants in an organ)'. The last piece in J.J. Walther's *Hortulus chelicus* (1688), includes a section in which the violin imitates an 'Organo Tremolante' by pulsing double-stopped minims in a single bow. Roger North talks about dividing long notes into shorter ones in the same bow 'as in the Italians *tremolo*' and he too likens the effect to 'the shaking stop of an organ'. Brossard (2/1705) states categorically that the device is intended to imitate the tremulant stop on the organ. Bailleux (1779) calls this 'balancement' and, noting the Italians call it 'tremolo', says that it produces the effect of an organ tremulant.



Ex.3 Marini: Sonata 'La Foscarina' op.1 (1617)

Sometimes the device has a programmatic function – most famously in the winter scenes of Lully's *Isis* (1677) and Purcell's *King Arthur* (1691) (ex.4). Another 'orchestral' example of the device occurs in Cesti's *Il pomo d'oro* (Act 4 scene iv). Most often it is simply intended as a kind of bowed vibrato. It is one possible explanation for the markings 'con affetti', 'affetti' or 'affetto' which appear above long notes in sonatas by Marini, Buonamente and Scarani, especially in situations where faster movement in other voices seems to rule out improvised embellishment. Right at the end of the 18th century Galeazzi expressed a preference for this kind of tremolo over left-hand vibrato as a way of being expressive. (Incidentally, he used the term 'tremolo' for both devices.)



Ex.4 Purcell: King Arthur, Act 3, Chorus of the Cold People

The device was not restricted to the violin family. Francesco Rognoni (1620) wrote enthusiastically of the viol being played 'con bella archata accentata, con i suoi tremoli' ('with fine accented bowing, with its *tremoli*). Christopher Simpson (1659), however, had some reservations: 'Some also affect a Shake or Tremble with the Bow, like the Shaking-Stop of an Organ, but the frequent use thereof is not (in my opinion) much commendable'.

(vii) Staccato bowings.

The term *staccato* is the past-participle of *staccare*, itself a shortened form of *distaccare* 'to detach'. It was used twice by Johann Walther in his *Scherzi da Violino solo* (1676) in contexts that imply short separated strokes. Brossard (2/1705) defined staccato as 'approximately the same thing as *spiccato*, that is to say that on all bowed instruments the bowstrokes should be dry and very detached or with each note separated from the others without being drawn out'. He gave *Picqué* and *Pointé* as French synonyms (*see* PIQUER and POINTER). (Note that he associates *staccato* particularly with bowed instruments; *tronco*, on the other hand, is a word which he says applies equally to voices and instruments.) At about the same time Roger North described '*Stoccata* or stabb' as 'a peculiar art of the hand upon instruments of the bow'. He recommended it especially as a way of producing expressive contrasts, citing the example of Matteis who 'used this manner to set off a rage, and then repentance; for after a violent *stoccata*, he entered at once with the bipedalian [i.e. 2′ long] bow, as speaking no less in a passion, but of the contrary temper'. Interestingly, although the Matteis *Ayres* abound in quite complex slurred bowings, there are no explicit detached-bowing staccato markings and just one group of ten semiquavers slurred with dots. Leopold Mozart defines *Stoccato* or *Staccato* as 'struck; signifying that the notes are to be well separated from each other, with short strokes, and without dragging the bow'.

Eventually, dots placed above or below the notehead became the accepted way of indicating staccato playing. But since dots of this kind were also a normal way of specifying *notes égales*, their presence in Baroque scores is somewhat ambiguous. One of the earliest examples of (apparently staccato) dots above noteheads appears in G.A. Pandolfi's *Sonate a violino solo* op.3 (1660). Two Bolognese publications, Pirro Albergati's *Pletro armonico* op.5 (1687) and Bartolomeo Bernardi's *Sonate da camera a trè* op.1 (1692) have 'spicco', a term which F.O. Manfredini (Concerti op.3, 1718) uses in conjunction with dots. Antonio Veracini uses short vertical strokes to indicate staccato in several sonatas of his op.1 (1692). Presumably, the separation of notes by rests in much 17th- and early 18th-century music is designed to achieve a staccato effect (as in the Vivace opening of Corelli's op.6 no.8 which is contrasted a few bars later with a Grave marked 'Arcate sostenuto e come stà'). Leopold Mozart uses the term *Abgestossen* (*see* ABSTOSSEN) when explaining the significance of little strokes written above or below the notes. The terms ABSETZEN (used by Quantz), AUFHEBEN (Löhlein and Reichardt) and *Erheben* (Leopold Mozart) imply a lifted off-the-string stroke.

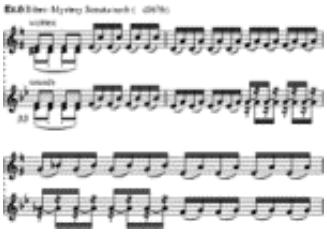
A variety of slurred staccato bowings formed part of accomplished violinists' techniques well before 1750 even if, as we have seen (see §II, 2(iv) above), there was little agreement about what label to give these bowings. Complex staccato bowings seem to have been regarded as a particularly violinistic form of virtuosity: Rousseau (1687) remarks disdainfully that the *dessus de viole* is above such vulgar display: 'It is never necessary [on the *dessus*] to practise those passages called *Ricochets* which we endure so reluctantly in violin playing'.

Groups of demisemiquavers with both slurs and dots appear in J.J. Walther's *Hortulus chelicus* (1688; ex.5). Many virtuoso examples appear in 18th-century sonatas. Castrucci (op.2 no.10, 1734) has a group of 22 quavers with dots under a slur with the direction 'Tutti in un Arcata' (judging from the advertisement referred to above, virtuoso slurred bowings must have been a Castrucci speciality). In 1777 W.A. Mozart praised the playing of Ignaz Fränzl for its 'beautiful staccato, played with a single bowing, up or down'.

Ex.5 Walther: Hortulus chelicus (1688), 6th suite

(viii) Ondulé, ondeggiando, bariolage.

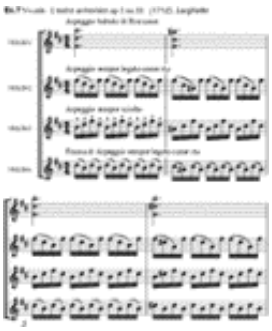
Walther uses the term *ondeggiando* (It: 'undulating') in his *Scherzi da violino solo* (1676) to describe a slurred oscillation between two strings. He had earlier called for the same effect (but without using the term) in *Hortulus chelicus* (1688). The sixth of Biber's 'Mystery Sonatas' (*c*1676) has an extended passage using this bowing which starts with alternating unisons (here facilitated by the scordatura tuning) – an effect which Baillot was later to call BARIOLAGE (ex.6). This is yet another instance of rather unstable terminology: Tartini and Löhlein use 'ondeggiamento' to refer to wavering of pitch in vibrato.



Ex.6 Biber: Mystery Sonata no.6

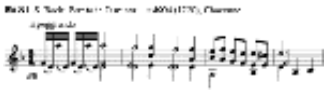
(ix) Arpeggiando, batterie.

There are many instances in early violin music of arpeggiando bowings – and the term itself appears in various sources (meaning to arpeggiate chords using slurred bowings). Walther has 'arpeggiando con arcate sciolte' written above broken-chord figurations in his *Scherzi da violino solo*. Earlier in this volume he had used 'Harpeggiato' above what appear to be a continuation of a rather different kind of bowing pattern. There are many later examples. Vivaldi, in the Concerto in B minor from *L'estro armonico* op.3 (1712) has a Larghetto section in which all four solo violins are given different articulations and bowing patterns; the first violin is instructed to arpeggiate in demisemiquavers, the 2nd and 4th violins are given legato slurrings, while the 3rd violin is given a staccato pattern (**ex.7**).



Ex.7 Vivaldi: L'estro armonico op.3 no.10, Larghetto

Rousseau, in his *Dictionnaire de musique* (Paris, 1768), identifies a continuous arpeggio played with separate bows as a '*batterie*', and Corrette in *L'art de se perfectionner dans le violin* (Paris, 1782) provides several models for translating notated chords into batteries. The Bach Chaconne from the Partita in D minor (BWV1004) provides obvious instances of chords which need to be treated in this way (**ex.8**).



Ex.8 Bach: Chaconne from the Partita in D minor (bwv1004)

(x) Mixed bowings.

Several types of bowstroke might be combined in the execution of a particular passage. **Ex.9**, for instance, contains slurred staccatos, slurs within slurs, and the same pattern played both down-bow and up-bow. In addition, the bowing pattern creates a cross-rhythm since it consists of four quavers in 3/4.

Ex.9

(xi) Multiple stops, chords and special effects.

Double stops (bowing several notes simultaneously) and chords feature in violin literature from early in the 17th century (*see* **MULTIPLE STOPPING**).

It is probable that violinists had discovered the expressive possibilities of effects like **SUL TASTO** or

sulla tastiera (to bow, or occasionally pluck, near or over the fingerboard, resulting in an ethereal tone; *see also* FLAUTANDO, and §II, 3(xii) below) and SUL PONTICELLO (to bow close to the bridge of the instrument) long before they were formally described in any treatises (though it is interesting that Quantz warns against playing too close to the bridge without acknowledging the potential for this to be used as a special effect). Tobias Hume has the instruction 'drum this with the back of your bow' in *The First Part of Ayres* (London, 1605) – the first documented instance of COL LEGNO. Farina calls for this effect in *Capriccio Stravagante*. The novelty of such a device stands out in the way something which can now be invoked with a simple, conventional direction is here explained fully: 'Qui si batte con il legno del archetto sopra le corde' ('Here the wood of the bow is tapped on the strings').

3. Bowstrokes after *c*1780.

This section is divided from the previous one by '*c*1780' as a rough chronological marker. The inference that the widespread use of bows having more features in common with the Tourte model (perfected in the mid-1780s) than with the 'Baroque' bows is a crucial step. This development was accompanied (and promoted) by a different ethos about the basic stroke (parallel to the changing concept of the 'ordinary' touch for keyboard players) and by an expansion of the range of special bowings. There was a movement away from a naturally articulated stroke towards a more legato style. The new ideal is stated very directly at the end of the 18th century by Galeazzi: 'in playing an adagio, the aim above all is to produce evenness, not just in the left hand but also in bowing, joining everything even more than seems possible … changing the bow as imperceptibly as possible demands considerable little skill'.

A case could be made for placing the turning point later than 1780. The Tourte bow took some time to gain universal acceptance (though in his edition of Leopold Mozart's *Méthode* (Paris, *c*1804), Woldemar described it as 'the only one in use') and it is only in the treatises of the 19th century that we find a significantly different perspective on the management of bowstrokes.

In the period leading up to the development and acceptance of the Tourte bow, it is clear that there was considerable variety in the types of bow used by players. Leopold Mozart tries to accommodate this in his description of how to play up-bow staccato: 'The weight of a violin bow contributes much, as does also in no less degree its length or shortness. A heavier and longer bow must be used more lightly and retarded somewhat less; whereas a lighter and shorter bow must be pressed down more and retarded more'.

Despite the abundance of systematic instruction addressed to advanced players published in the 19th century, much ambiguity surrounds the notation of certain kinds of bowings. In particular, there is considerable inconsistency in the use of dots, strokes and horizontal lines in conjunction with slurs to indicate varying degrees of separation from *portato* to flying SPICCATO.

Joseph Joachim accompanied by Clara Schumann: drawing by Adolph Menzel,…

A low right elbow remained a distinctive feature of violin technique after 1800. It finds its most extraordinary expression in the recommendation by Campagnoli (1824) that players practise with a cord around their elbow linked to their clothing to prevent the elbow from rising too far away from the body. It can be seen in many 19th-century depictions of violinists such as the drawing of Joseph Joachim in fig.8.

(i) Down-bow and up-bow.

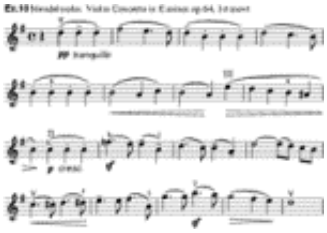
Much greater freedom in ways of organizing bowing is obvious in 19th-century repertory and there is considerable emphasis on cultivating an up-bow which could be as forceful as a down-bow. Nevertheless, for ensemble playing the old 'rule of the down-bow' continued to provide a basis for uniformity. Spohr (1833) emphasized this: 'the orchestral player must conform strictly to the old rule which prescribes: take the strong beats in the bar with the down-bow, the weak beats with the up-bow, and thus begin every bar with a down-bow and end it with an up-bow'.

(ii) The legato slur.

Possibly the most conspicuous musical characteristic of the Tourte bow is its ability to produce a seamless legato. A preference for this kind of bowing is evident in many early 19th-century treatises beginning with the *Méthode* produced by Baillot, Rode and Kreutzer for the Paris Conservatoire in 1803. Stowell (1985, p.197) has made the point that comparison of the original editions of Haydn quartets with early 19th-century editions indicates that the use of legato slurs was on the increase.

(iii) Portato (It.; Fr. notes portées, louré).

This expressive re-articulation or pulsing of notes joined in a single bowstroke was described by Galeazzi as 'neither separate nor slurred, but almost dragged'. A similar stroke had earlier been described by Leopold Mozart though he does not use the term *portato*. Baillot emphasizes that *portato* achieves a kind of undulation of the sound (rather than separated notes). He gave two alternative methods of notating the effect: firstly, a wavy line (also used to indicate vibrato which Baillot considered a related device) and secondly, dots under a slur. (Brahms was later to criticize the ambiguity of this notation.) Later in the 19th century it became common to indicate *portato* with lines under a slur. Heinrich Dessauer's 1903 annotated edition of the Mendelssohn Violin Concerto in E minor uses both (ex.10).



Ex.10 Mendelssohn: Violin Concerto in E minor op.64, 1st movt

There are other, less gentle, ways in which slurred notes can be articulated, such as *saccadé*, in which the second of the two notes under a slur is sharply accented. Described in detail by Baillot (1834), it is similar to what Spohr (1833) called 'the Viotti bowing'.

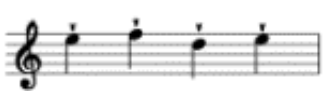
(iv) Détaché.

The term *détaché* simply means 'separated' and it can be applied to any notes not linked by a slur. Baillot's comprehensive survey of *détaché* strokes subdivided them into muted *détaché* (such as the *grand détaché* and *martelé*) where stopping the bow on the string deadens the vibrations and thus creates a 'muted' accent, elastic *détaché* which covered off-the-string strokes, and dragged *détaché* (*détaché traîné*) where smooth bow changes leave no audible gap between each note.

(v) Martelé.

The literal meaning of this term is 'hammered', referring to a percussive on-string stroke produced by an explosive release following heavy initial pressure ('pinching') on the string, and a subsequent stop of the arm (and tone) before next 'pinching'. The result is a sharp, biting *sforzando*-like attack and a rest between strokes. The early bow, with its comparatively gentle attack, cannot produce this stroke effectively. *Martelé* can be played in any region of the bow, but is best between middle and point. However, it cannot be executed in excess of a certain speed because of the preparation required for each stroke. *Martelé* may be indicated by dots or by arrow-head strokes as in ex.11.

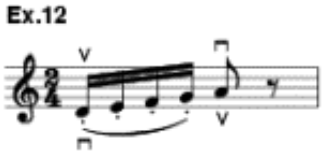
Ex.11



Ex.11

(vi) Staccato.

As noted in §II, 2(vii) above the term STACCATO literally means 'detached' and does not necessarily imply anything about whether this effect is achieved with separate or slurred bowings. In string playing from the late 18th century on, however, it was more generally applied to notes separated from each other in the same bowstroke, normally (or at least, more manageably) up-bow (see ex.12). Baillot classified this with the 'muted *détaché*' strokes.



Ex.12

(vii) Sautillé.

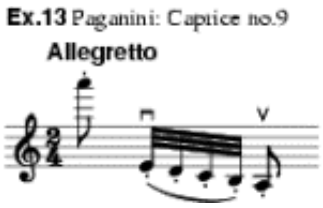
This is a rapid detached stroke played in the middle of the bow so that the bow bounces of its own volition. *Sautillé* is indicated by dots (sometimes by arrow-headed strokes). Classified by Baillot as one of the 'elastic *détaché*' strokes.

(viii) Spiccato.

Although this term was originally a synonym for *staccato* (see §II, 2(iv) above), by the early 19th century it was consistently used for a short off-the-string stroke, sometimes a synonym for *sautillé*.

(ix) Ricochet, jeté, flying staccato, staccato volante, flying spiccato.

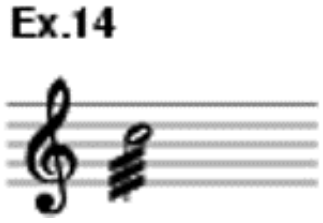
In this bowstroke the bow is thrown on the string, making contact in its upper half, so that it will bounce or 'ricochet' off the string from two to six or more times. These terms are rarely used as a direction, the bowing being implied by context and indicated, as in ex.13, by dots within a slur (like other forms of staccato).



Ex.13 Paganini: Caprice no.9

(x) Tremolo.

The modern tremolo bowstroke is generally used in the orchestra but also (after the mid-19th century) in some chamber music and solo playing: the same note is reiterated very rapidly with very little bow at the point. The notation is as in ex.14.



Ex.14

(xi) Multiple stops

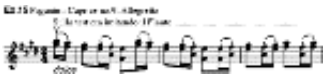
(xi) Multiple stops.

There is considerable variety in performing triple and quadruple stops: they can be spread (evenly, or in pairs of notes) or struck as a single chord in so far as the curve of the bridge allows. Obviously the latter is more possible for 3-note chords than for those involving all four strings. Baillot gives instructions for playing passages of triple stops. In the late 18th and early 19th centuries it seems that placing the bottom of a chord on the beat and then spreading it upwards was still favoured. That, at least, is the method described by Galeazzi. Spohr is the first person to describe the modern practice of breaking a chord in two with the upper notes coming on the beat.

Many passages notated as chords are intended to be arpeggiated in some way. This may be indicated through having the first in a series of chords spelled out as an arpeggiation or through an instruction such as *arpeggiando*. 19th-century writers stress the importance of finding interesting ways of arpeggiating – through varied bowing patterns, picking out the bass or the top of the chord, or bringing out a melody (*see also* **MULTIPLE STOPPING**.

(xii) Special effects.

SUL PONTICELLO, bowing very close to the bridge to produce a glassy timbre, is called for by both Haydn and Boccherini but throughout the 19th century continued to be regarded as a special effect. Galeazzi mentions it as evidence of the 'ridiculous extremes' some players would go to for novelty. **SUL TASTO**, or bowing over the fingerboard, produces a softer, more diffuse sound. This device is mentioned by Galeazzi and described in detail by Baillot. Paganini called for it in the 24 Caprices specifically to imitate the flute (**ex.15**). *Flautando* or *flautato* is the flute-like sound produced by using very little weight with a fast bowstroke. The effect is made more pronounced by playing near the fingerboard.



Ex.15 Paganini: Caprice no.9, Allegretto

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Peter Walls

III. Non-Western instruments

The variety of bows used throughout the world reflects the musical requirements of and sometimes the symbolism associated with the many different bowed instruments. A distinction may be made between bows where the hair is kept taut either by an adjustable frog mechanism (European-type frogs have recently been adopted for many Japanese and Chinese bow types) or by the tension inherent in the bending of the bowstick when the bow hair is attached, and those where the bow hair is normally slack but the player uses one or more fingers curled around the hair to control tension during play. Examples of the last type are used in playing the Indonesian *rebab* and the Japanese *kokyū*. Bow hair lasts longer when it is not permanently under tension; thus some bows are shaped by carving, others by heating, and only tensioned when in use. Horsehair is usually the preferred material for bow hair, but in parts of Africa lengths of sisal suffice. 10th-century Chinese sources suggest that string instruments were sounded using a thin strip of bamboo (i.e. a friction stick) before horsehair was employed.

The length of the bow is related to musical needs. The non-melismatic and very rapid syllabic playing style of the Ganda *endingidi* (of Uganda) calls for an extremely short bow (about 18 cm), as do the brief, rhythmic but melismatic, phrases characteristic of the *masenqo*, played by the Ethiopian *azmari* (minstrels). The generally longer bows associated with Oriental traditions are obviously suited to longer melismatic phrases. The thickness of the bow is related to musical pitch (as in European usage). Heavy and therefore lower-pitched strings of instruments like the Rajasthani *rāvaṇhatthā* and the North African *ribāb* require more solidly-built bows. However, some thinner and therefore lighter bows are shaped so that there is adequate weight in the stick nearer the point of the bow (e.g. the Okinawan *kūchō* and Sundanese and Malaysian *rebabs*). In Kelantan, Malaysia, the elegant carving of the bow complements the rich decoration of the instrument and the costumes of the dancers and singers.

Other distinguishing features include the use of bells and other jingling devices attached to the bow to give a rhythmic accompaniment during play (e.g. the *rāvaṇhatthā* of Rajasthan and Gujarat and the Cretan *lira*). Bows may also be differentiated by the method of attaching the hair to the stick, which ranges from knotting directly onto the bowstick (notches are often carved in the stick to prevent slippage), knotting the hair after passing it through a hole in the stick, binding the hair onto an attachment cord, and using various types of frog.

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