CAPTURING SOUND

HOW TECHNOLOGY HAS CHANGED MUSIC

“A major contribution.”
—NEW YORKER

mark katz
It has been described as a plague, compared to canine tail-wagging, and derided as vulgar; others have called it life-giving, a charming grace, or an emotional thrill. The subject of such equally passionate ridicule and praise is vibrato, perhaps the most hotly debated aspect of violin technique in the history of the instrument. Although violinists have been using vibrato for centuries, for more than three hundred years this pulsing effect, created by the rapid quiver of the left hand, was treated as an embellishment, considered artistic only in its subtle and sparing use. The first decades of the twentieth century, however, saw a transformation in the practice: concert violinists began using vibrato more conspicuously and nearly continuously, starting a trend still followed in the twenty-first century. What was once a special effect had become an integral element of violin sound.

This dramatic change has long been something of a mystery. For decades writers have commented on the matter, but as yet no fully convincing explanation has been put forward. I propose that this shift in performance practice is in fact a phonograph effect. This is an argument some will find unpalatable, for I am claiming that such a crucial aspect of mod-
ern violin playing arose as a practical and largely unconscious response to the limitations of a machine. Yet I in no way want to deny violinists their agency or to devalue modern vibrato practice. Rather, my purpose is to reveal the intimate relationship between aesthetics and technology and question whether in this case, and perhaps in all cases, the practical and the artistic can truly be separated.

THE RISE OF THE "NEW" VIBRATO

Before the twentieth century it was not vibrato that violinists considered the most important agent of musical expression, but the bow—often called the "soul" of the violin. Treatises rarely mentioned vibrato, and when they did it was usually to warn readers against its overuse. Typical was Louis Spohr's 1832 Violinschule, which counsels that vibrato "should hardly be perceptible to the ear." Some writers were more specific, noting their recommended use of vibrato in musical examples (usually with wavy lines under the notes). Exercises in methods by Pierre Baillot and Charles de Beriot in 1834 and 1858 are positively frugal, indicating vibrato on only a very few of the highest notes. In later decades violinists continued this cautionary approach. For instance, Joseph Joachim, one of the most famous and well-respected violinists of his age, admonished the readers of his 1905 treatise always to "recognize the steady tone as the ruling one." Even one of the earliest tutorials devoted solely to violin vibrato, written by the Englishman Archibald Saunders, concurred with the prevailing view. Saunders advised that the violinist "should avoid its use altogether in rapid runs [and] bear in mind that good violin tone is possible without the employment of this fascinating embellishment."

It is hard to pinpoint when vibrato first began to change. We can find isolated complaints about "constant" vibrato in the late nineteenth century, but not enough to suggest a trend. Moreover, what these observers branded as overpowering might seem rather delicate when compared to later practice. The widespread use of vibrato really seems to have been noticed around 1910. In 1908 two British writers observed an increasing use of the "everlasting vibrato" among violinists, and both regarded the trend ambivalently. One compared the shaking left hand of vibrating violinists to "jelly on a plate of a nervous waiter." The other could muster only enough enthusiasm to suggest that the practice "surely must have some virtue."

Despite such complaints, vibrato was becoming more widely accepted. A 1910 German treatise proclaimed that "artistic finish is impossible without a correctly made vibrato," and in 1916 an English critic declared vibrato "indispensable." In 1924 the eminent teacher Carl Flesch wrote that "if we consider the celebrated violinists of our day it must be admitted that in nearly every case they employ an uninterrupted vibrato." By 1929 the practice had become so entrenched that one American teacher could write what would have been heretical nearly thirty years before: "Violin playing without vibrato," he claimed, "is like a day without the sun—dismal and gray."

THE RECORDED EVIDENCE

Early-twentieth-century recordings of solo violinists corroborate the shift from the old to the new vibrato. Generally speaking, on recordings made before 1910 vibrato is slight, used only to decorate melodically important notes. The 1910s are in retrospect a transitional period, with some discs demonstrating the ornamental approach and others revealing a conscious cultivation of a stronger, more frequent vibrato. After 1920 the new vibrato is apparent in the recordings of most violinists.

A few examples will illuminate this trend. A useful starting point is with the discs left by the two most renowned violinists of the later nineteenth century, Joseph Joachim and Pablo de Sarasate. Stylistic opposites, Flesch called them "the two poles of the axis around which the world of the violin had turned." The Hungarian-German was considered serious, intellectual, and one for whom technical matters were merely a means to artistic ennoblement; the Spaniard was admired for his elegance, his "silken" or "silvery" tone, and his perfection of technique. Yet for all their differences, they shared a conservative approach toward vibrato.

As we know, Joachim militated against the overuse of vibrato, and he clearly followed his own advice. In his 1903 recording of the Adagio from
Bach's Sonata in G Minor he vibrates slightly on some of the sustained tones and applies a few quick shakes to a few of the highest notes in each phrase, but most of even the longer notes are played straight. While a livelier vibrato might be expected from his performances of Romantic music, the old style prevails on his 1903 disc of Brahms's Hungarian Dance no. 1 (Track 3 on the accompanying CD). In the first twenty-four measures, for example (0:00–0:24), he vibrates infrequently and often for only a fraction of the note's duration. Vibrato does not define Joachim's sound; rather, it is a means to various ends, whether distinguishing repeated pitches, intensifying the high point of a melody, or signaling upcoming cadences.

Today, most violinists perform Sarasate's often intensely expressive works with a generous vibrato. Surprisingly, this approach is not in keeping with the composer's own practice. On the 1904 recording of his Zigeunerweisen he plays the dramatic opening phrase with almost no vibrato, something no modern violinist would do. Over the whole of the work he adds a few quick bursts to relatively short notes, applying a slower, wavering vibration to some of the longer ones. And although he vibrates more often than Joachim, he too plays whole phrases straight. Interestingly, Sarasate often plays long notes without a hint of vibrato, even when contemporary taste would have allowed it. Perhaps he cultivated this practice to highlight the purity of his famed tone.

A transitional phase in the use of vibrato may be discerned in recordings from the 1910s. During this period two violinists entered the recording scene who are often cited as pioneers in the use of vibrato, Eugène Ysaÿe and Fritz Kreisler. Ysaÿe's vibrato was, according to Carl Flesch, "a whole world away from what had been customary until then: the incidental, thin-flowing quiver 'only on expressivo notes.'" In Ysaÿe's 1912 recording of Henri Vieuxtemps's Rondino, the vibrato is faster and wider than Joachim's or Sarasate's. Yet while the vibrato is strong at times, it is often entirely absent. In the beginning of the work he vibrates conspicuously only on the long notes of alternate phrases, and the difference between the vibrated and nonvibrated notes is clear.

If Ysaÿe hinted at the possibility of a new vibrato, Kreisler fully realized its potential. According to Flesch, Kreisler "started a revolutionary change . . . by vibrating not only continuously in cantilenas [lyrical, song-like melodies] like Ysaÿe, but even in technical passages." When listening to Kreisler's 1911 recording of his Liebesleid, for example, one gets the sense that the vibrato is not merely added to individual pitches, but that it is a vital, underlying force that connects all the notes in a legato phrase.

The shift was not yet complete, however. Whereas many recordings during this period point toward the new vibrato, others continue to exemplify the old school. Recordings made around 1910 by Marie Hall or Jan Kubelik provide perfect examples of the "thin-flowing quiver" Flesch described.

The transformation of vibrato from the old to the new is nicely illustrated by comparing turn-of-the-century recordings by Joachim and Sarasate to those of the same works made in later decades. There is a world of difference, for example, between Joachim's 1903 recording of the Adagio from Bach's G minor sonata and the 1931 and 1935 recordings of the work by Joseph Szögeti and Jascha Heifetz. On the later discs vibrato is evident on most of the sustained pitches and many of the faster ones, even some of the thirty-second notes; furthermore, both artists (especially Heifetz) vibrate faster and more widely than Joachim. A marked difference is also clear in later recordings of the Hungarian Dance. The 1920 and 1940 recordings by Heifetz and Toscha Seidel (Tracks 4 and 5 on the accompanying CD) display a greater use and intensity of the vibrato; in the opening section we hear it on eighteen notes in Heifetz's recording (0:00–0:20) and twenty-five in Seidel's (0:00–0:23)—twice and nearly thrice as often as Joachim (Figure 3). Heifetz's and Seidel's discs certainly confirm the worry of their teacher, Leopold Auer, that his students would not resist the lure of vibrato. As Auer wrote in 1921, "The excessive use of vibrato is a habit for which I have no tolerance, and I always fight against it when I observe it in my pupils—though often, I must admit, without success." Similar patterns in the use of vibrato may be observed in comparisons of Sarasate's recordings with later ones. Zino Francescatti, for example, introduces a rich, broad vibrato from the beginning of his 1922 Zigeunerweisen. Francescatti's vibrato is much more an organic part of his sound than Sarasate's, and is actually less variable because of its constant intensity. Interestingly, the younger violinist takes the opening much slower than Sarasate, a decision that may have been necessitated in part by a desire to vibrate on nearly every note.
THEORIES ON THE RISE OF THE "NEW" VIBRATO

Although scholars widely agree that early in this century violinists began to use vibrato more often and conspicuously, there has been little serious discussion of why this happened. A few possibilities have been suggested, however, and these are worth considering.

One possibility is that the new vibrato arose as a reflection of changing artistic ideals. We must remember, however, that the practice met with strong critical disapproval. It is not surprising that violinists from the old school, such as Joachim and Auer, fought against the trend, but resistance continued well after the new vibrato became standard practice. As late as 1950 violinist Adila Fachiiri complained of the "unremitting, nauseating vibrato used by present-day violinists," and even more recently, Hans Keller decried the "mania for vibrato" in modern violin playing. In Vibrato on the Violin, Werner Hauck sees the new vibrato as part of a much broader trend. "About 1900," Hauck notes, "concepts of the Universe changed," giving rise to a variety of phenomena, from impressionism and expressionism to quantum theory and psychoanalysis. "Is it surprising," he wonders, pointing to the new vibrato, "that violin playing, like a highly sensitive seismograph, was influenced by all this and also reacted?" This conclusion is unverifiable and, indeed, counterintuitive. Considering the sharp edges, distinct lines, and hard, polished surfaces common in the art and architecture of the time (e.g., Art Deco, Bauhaus, Cubism, Precisionism), one might reasonably conclude that a clean, spare violin sound with less, not more, vibrato would have been embraced. The strong and continued critical opposition to the new vibrato, as well as its incongruence with broader trends, suggests that its development was not—or at least not solely or at first—tied to aesthetic considerations.

Robin Stowell has suggested that the introduction of the chin rest in the early nineteenth century contributed to the rise of the new vibrato. The chin rest, which transferred the weight of the violin to the neck and shoulder, liberated the left hand, which had previously helped keep the violin firm against the chest. According to Stowell, the "gradual adoption of the more stable chin-braced grip . . . freed the left hand to cultivate a more fluid vibrato movement." Perhaps the full range of motion of the

Many similar examples could be chosen from the hundreds of violin recordings released early in this century. A broader survey, however, would only underscore what should be clear from the written and aural evidence presented here: the first decades of the twentieth century witnessed a fundamental transformation in the use of vibrato on the violin.
left hand was necessary for the new vibrato, but this explanation does not tell us why it developed in the early twentieth century and not decades earlier with the widespread use of the chin rest. Clearly, it was not simply the *possibility* of a prominent vibrato that led to its realization.

Another argument links the trend in vibrato to a later change in the instrument: the adoption of metal strings. After World War I, violinists began to replace their gut strings with steel ones. The latter have a harsher tone, and violinists may have felt the need to soften the sound with a generous vibrato. But the change in strings could not have been the main impetus behind the new vibrato, which arose well before most violinists were using metal strings. The widespread switch to metal began around 1920 but was not complete until nearly World War II. What's more, violinists can be heard on record playing with a generous vibrato on *gut* strings, while others, known to have used steel, vibrated infrequently. Such counter-examples include Fritz Kreisler's prominent vibrato on his earliest recordings, made at a time when all violinists were using gut, especially on the lower strings, and Maud Powell's selective vibrato on a steel E-string in her recordings from the 1910s. Thus the change to metal, while it may have contributed to the new use of vibrato, could not have caused it.

The most commonly cited force behind the rise of the new vibrato is the influence of Fritz Kreisler. Ever since 1924, when Carl Flesch claimed that Kreisler "started a revolutionary change" in the use of violin vibrato, critics have pointed to him as the prime mover in this aspect of performance practice. The suggestion is plausible, for Kreisler was immensely popular in the early twentieth century, widely heard both in concert and on his recordings, which exhibited a robust and almost constant vibrato. I question, however, whether the origins of this trend really lay with Kreisler. There was a significant delay—at least fifteen years—between Kreisler's "revolutionary change" and the broader adoption of the new vibrato. A throbbing, nearly uninterrupted vibrato is evident on Kreisler's earliest recordings, from 1904, yet although he had already been heard and admired throughout Europe and in the United States since the turn of the century, the majority of violinists did not adopt a comparable practice until the 1920s. Rather than having initiated the new practice, it is more likely that Kreisler was simply held up as a model when other violinists began to use a prominent vibrato.

**THE ROLE OF RECORDING**

Although a number of explanations for the transformation in violin playing have been put forward, none of them sufficiently tells us why vibrato changed and why it changed when it did. I want to explore what is perhaps a radical possibility: that recording was largely responsible. Specifically, I would suggest that a constant and strong vibrato became increasingly useful for concert violinists who regularly made recordings, and it did so in three ways. First, it helped accommodate the distinctive and often limited receptivity of early recording equipment. Second, it could obscure imperfect intonation, which is more noticeable on record than in a live setting. And third, it could offer a greater sense of the performer's presence on record, conveying to unseeing listeners what body language and facial expressions would have communicated in concert.

When recording for the megaphone-shaped acoustic horn, the violinist faced a set of unwelcome alternatives: play as close as possible to the horn and risk hitting it—thus ruining the take—or play at a comfortable distance and risk being inaudible. Violinist Arcadie Birkenholz remarked on the former alternative, when he recalled that in the days of acoustic recording "you had to get very close to the horn for the tone to register. And when you did that, sometimes your bow or arm hit the horn and that ended it—you had to make the record over." A different but equally unwelcome problem faced violinists recording with microphones. The problem was that microphones picked up the frictional sounds of the moving bow, sounds seldom heard in the concert hall because of the distance between violinist and audience. Veteran recording artist Louis Kaufman noted that in the studio, "you must be a little more careful with the bow pressure. You dare not press and get the extremes of *forte* that you could get in a hall in which the airspace swallows up a lot of the surface noise."

The violinist recording acoustically, then, needed a way to project sound to the horn, and not simply by playing louder. And the violinist recording electrically—with microphones, that is—needed a way to avoid projecting normally inaudible scratchiness, but without sacrificing tone or dynamic range.

Vibrato helped violinists resolve both dilemmas. For those recording acoustically, a strong vibrato helped project their playing to the none-too-
sensitive machines, thanks to the periodic fluctuations in intensity—variations in pressure resulting from the contraction and expansion of air—that mark the technique. By using more vibrato, the recording artist could increase the effective loudness of a note without overplaying and without coming into contact with the horn. A comparison of two acoustic recordings of Chopin’s Nocturne in E-flat (arranged for violin) illustrates this point. The last note is a high E-flat, so high that acoustic machines were normally incapable of capturing it. Indeed, it is almost inaudible on Mischa Elman’s 1910 recording (Track 6, 4:01ff.), where the artist uses no vibrato. On Jascha Heifetz’s 1918 cut (Track 7, 4:22ff.), in contrast, the high note is much more easily heard—thanks to the vibrato, which gives it a pulsing quality.

While an increased use of vibrato helped compensate for the insensitivity of acoustic horns, it also allowed violinists to project their sound to microphones while minimizing bowing noise. Louis Kaufman recognized vibrato’s usefulness in this way. “This is something of a trick, you know—getting around the surface [noise] and yet getting the intensity at the same time. The vibrato has to be somewhat heightened: it has to be somewhat faster than you really need for a public hall.” Kaufman thus knowingly increased his vibrato to meet the special needs of recording. Undoubtedly others, too, found that a heightened vibrato met the demands of the new process. In fact, many of the violinists whose recording careers spanned the acoustic and electrical eras, including Bronislaw Huberman, Mischa Elman, Joseph Szigeti, and Jascha Heifetz, can be heard using a stronger vibrato in their electrical recordings.

In addition to aiding in the projection of sound, an increased use of vibrato helped recording violinists hide imperfect intonation. Of course, it has always been important to play in tune, but with recording it became crucial. The repeatability of recordings renders bad intonation permanent, and the lack of the visual dimension means that the performer’s gestures or expressions cannot draw the listener’s focus from the sound, as may happen in concert.

When violinists do not use vibrato their finger placement must be absolutely precise; the slightest inaccuracies will immediately be heard as out of tune. Vibrato, however, gives the violinist some wiggle room—literally—to find the center of the pitch. Paradoxically, with vibrato, one need not be precise in order to sound precise. A note played with vibrato—if it is not too slow or wide—is perceived as a single pitch, even though one is hearing rapidly changing frequencies. Thus, as long as the violinist vibrates immediately, the initial finger placement need not be exact. Scientific experimentation has, in fact, proved this. As a 1958 study concluded, “Vibrato allows performers more time to adjust their intonation before an audience can detect the mean pitch.” Significantly, it was not until the advent of the phonograph that violinists widely started to recognize the use of vibrato to avoid bad intonation. In 1919 Edmund Sevren described vibrato as “camouflage”; Auer complained in 1921 that too many artists employed vibrato “in an ostrich-like endeavor to conceal bad tone production and intonation”; and in 1924 Flesch wryly noted that violinists using vibrato may “create the impression of playing in tune.” Given the heightened perceptibility of poor intonation on recordings, the recognition that vibrato could compensate for errant finger placement, and the concurrence of vibrato’s rise with the increased recording activity among violinists, it seems reasonable to conclude that professional concert violinists began to use more vibrato in part to conceal imperfect intonation from the unforgiving phonograph.

I say “in part” because there is yet a third way in which vibrato may be understood as a response to the exigencies of recording: the technique could also help compensate for the loss of the visual element in recordings. In concert settings, unlike in recordings, performers communicate to audiences and audiences react to performers through sight as well as sound. Consider Robert Schumann’s remark about Franz Liszt in performance: “Within a few seconds tenderness, boldness, exquisiteness, wildness succeed one another; the instrument glows and flashes under the master’s hands. He must be heard and seen; for if Liszt played behind a screen a great deal of poetry would be lost.” In 1991 music psychologist Jane Davidson reported some remarkable findings that confirmed Schuman’s conclusion. In an experiment Davidson presented subjects with videotaped musical performances. She did so in three different ways: with the video on but the sound off, with the sound on but the video off, and with both sound and video on. Subjects were then asked to describe the performers’ level of expressivity, choosing between deadpan, exaggerated, and projected, which is somewhere in between the two extremes. Davidson found
that subjects were most accurate in describing the performers’ intended level of expressivity simply by watching the performance. That is, subjects scored highest when they could not even hear the music. From these results, Davidson concluded that “vision can be far more informative than sound in the perceiver’s understanding of the performer’s expressive intentions.” (Notice the parallel to the McGurk Effect, mentioned in chapter 1.) One implication of this study is inescapable: listeners lose a good deal of information about the expressive manner of performances they hear on recordings.

I suggest that the more frequent and prominent use of vibrato helped violinists communicate to unseeing listeners what their gestures and expressions could not. It is no coincidence that in the age of recording violinists began to recognize that vibrato could help convey emotion. Early in this century vibrato was variously described as reflecting the violinist’s “innermost soul,” as an “inner, psychic vibration,” or as “the barometer of our emotions and inspirations.” Before violinists began to record in significant numbers, such comments would have been made about the bow, not vibrato.

Violinists saw another important function for the vibrato as well: the individuation of tone. Siegfried Eberhardt wrote in 1910 that “the individual characteristics of different artists are... recognizable only... when the vibrato is employed.” In 1924 Carl Flesch remarked that vibrato could even be used to identify an unseen violinist. “If two violinists, whose tonal qualities differ most widely, play the same sequence of tones on the same instrument behind a curtain, each using his own vibrato, the individual player may be easily and surely distinguished, while without the participation of the left hand... the identity of the player can only be determined by chance.”

I believe that the new focus on vibrato as a means both for conveying emotion and for distinguishing among violinists is connected to recording’s missing visual dimension. When seen always accompanied hearing in musical performance, there was no question as to the identity of the performer, and the expressiveness of a performance was strongly a function of the visual—and visceral—impact of the artist’s physical presence. It was purely hypothetical for Schumann to consider Liszt (or any other performer) playing out of sight—it just was not done. But when Carl Flesch spoke of listening to two unseen violinists, he was not being fanciful, for every recording artist plays and is heard as if “behind a curtain.” Although there was no way for recording violinists to replace the visual dimension of live performance, it was possible to put a clearly individual stamp on one’s playing and even to restore some of the “lost poetry” through the use of vibrato. A survey of early recordings supports this conclusion. Mischa Elman’s “throbbing” could be easily distinguished from Jascha Heifetz’s “nervous” vibrato; and no one would confuse Fritz Kreisler’s omnipresent shake for Marie Hall’s essentially decorative use of the technique. And within a single work, any of these artists might choose to emphasize certain notes or phrases with added vibrato, or to communicate increasing or relaxing emotional intensity through changes in the speed or width of vibrations. Yet while every variety, shade, and speed of vibrato may be heard, the study of historical violin recordings clearly reveals the transformation of vibrato from an accessory to expressive violin tone to a constituent of it.

I hope to have made a compelling case linking recording and the rise of the new vibrato. First, the timing is right: we hear the beginnings of the new vibrato just at the time recording became an important professional activity for violinists. Second, by using vibrato violinists were able to meet recording’s distinctive challenges: the insensitivity of acoustic horns and the problematic sensitivity of microphones, the enhanced perception of poor intonation, and the lack of the visual element.

I should make clear, however, that by focusing on the influence of recording I do not intend to preclude other possibilities. Changing tastes, the technique of particular artists, and developments in the physical aspects of the violin surely had some role in shaping the practice of vibrato. Yet singly or taken together, these cannot fully account for the change in performance practice. I maintain that sound recording was the most direct cause, and perhaps the only necessary condition, for the rise of the new vibrato.

What, then, does this conclusion tell us? Most specifically, we may now better understand the forces behind an important change in violin performance practice. From this shift arose a new, distinct sound, one that
remains with us today. Practically speaking, historically minded violinists may be inspired by the early Beethoven and Brahms recordings to use a more selective vibrato in the Romantic repertoire, and not solely in Baroque and Classical works. Violinists who record, whether commercially or for their own use, might also reflect on how they themselves respond to the demands of the technology. Such self-knowledge could perhaps lead to a fruitful reevaluation of technique or style.

There are broader implications as well, for I am questioning our preconceptions about the nature of sound recording. As I point out throughout this book, recording is not simply a preservational tool, but a catalyst as well. In order to best exploit the possibilities of this technology violinists made a small adjustment in their playing, but one that brought about a profound transformation in the way musical beauty is judged. As we have seen, the new vibrato arose as an accommodation to practical circumstances, but later came to be valued for its expressive potential. Necessity, it seems, may sometimes be the mother of aesthetics.
CHAPTER FOUR


7. For example, a review of an 1881 performance in London by an English
violinist complained of the performer’s "constant tremolo [i.e., vibrato] which we have frequently to note in violinists of the French school" (Athenaeum, no. 2779 [29 January 1881]: 173).


13. I am focusing here on solo violin playing (i.e., of unaccompanied works and works with piano or orchestral accompaniment) as opposed to chamber or orchestral playing, and am doing so for two reasons. First, it is difficult to analyze vibrato or distinguish one player’s use of it from another’s when many violinists are playing simultaneously; and second, soloists led the vibrato trend, with ensemble players following behind.


16. Listeners may notice that the recording is pitched quite a bit lower than is typical (this is particularly obvious when comparing it to the Heifetz and Seidel performances included on the CD). It is very unlikely that Joachim tuned his violin flat for this recording; the change in pitch almost certainly occurred in the recording or remastering process.

17. When studying Joachim’s recordings we must allow for the possibility that his advanced age at the time (seventy-two) affected his vibrato. I believe the recordings are generally representative of his practice, however, for his use of vibrato reflects his written statements on the matter and seems too purposeful to be the result of the ravages of old age.

18. Pablo de Sarasate, performing Pablo de Sarasate, Zigemenweisen, on Great Virtuosi of the Golden Age, Volume I, Pearl compact disc GEMM CD 9101.


22. Fritz Kreisler performing Fritz Kreisler, Liebesleid, on The Kreisler Collection: The Complete HMV Recordings, Biddulph compact disc LAB 009-10.

23. Three of Hall’s recordings have been reissued on Great Virtuosi of the Golden Age, Volume II, Pearl compact disc GEMM CD 9102. Many of Kubelik’s discs have been compiled on Jan Kubelik, The Acoustic Recordings (1962-1973), Biddulph compact disc LAB 033-34.


A note on vibrato measurement: This example indicates only the presence of vibrato, not the frequency or pitch extent. Computer software is available for measuring these aspects of vibrato, but is not used here because such programs reliably analyze only unaccompanied performance. All observations in this chapter about particular violinists’ vibrato thus arise from close listening to recordings. While this approach has its limitations, conclusions drawn from this method of listening are based on human perception, not on possibly imperceptible differences measurable only by computer.


27. Zino Francescatti performing Pablo de Sarasate, Zigamenweisen, on Zino Francescatti: The Complete HMV Recordings, Biddulph compact disc LAB 030.

28. For further comparisons, see Robert Philip’s survey of recorded string vibrato, Early Recordings and Musical Style, 97-108, which complements and corroborates the present one.


33. Fritz Kreisler’s earliest recordings have been reissued on The Kreisler Collection: The Complete Acoustic HMV Recordings, Biddulph compact disc LAB 099-10. Examples of Powell’s playing from 1909 to 1917 may be heard on Maud Powell, Biddulph compact disc LAB 094. Powell noted in an interview given around 1918 that she had been using a steel E-string for twelve years, so these recordings were all presumably made with the steel E; see Maud Powell, interview with Frederick Martens, in Violin Mastery (New York: Stokes, 1919), 194–95.


38. The difference in the audibility of the two E-flats probably has little to do with improvements in recording technology between 1910 and 1918. Both recordings were made with acoustic recording horns, and other than the very high notes, the sound on both recordings is comparably clear.


41. Edmund Severn, interview with Frederick Martens, in Violin Mastery, 237; AeTu, Violin Playing as I Teach It, 59; Flesch, Art of Violin Playing, 20.


43. Ibid., 112.

44. Hans Wessely, A Practical Guide to Violin-Playing (London: Joseph Williams, 1913), 90; Maximilian Pflizer, interview with Frederick Martens, in Violin Mastery, 179; and Hahn, Practical Violin Study, 137.

45. Eberhardt, Violin Vibrato, 14.

46. Flesch, Art of Violin Playing, 35.

CHAPTER FIVE


2. For more on these festivals, see Josef Häusler, Spiegel der neuen Musik: Donaueschingen (Kassel: Bärenreiter, 1996).

3. The program for the Neue Musik Berlin 1930 festival is reprinted in ibid., 430.

4. Martin Elste has tested this possibility by overdubbing two recordings of the work eight beats apart. I have heard Elste’s canonic recording and find it effective, though it is only speculation that Hindemith played the recordings in this way.


7. “Ich wählte dazu das gesprochene Wort und ließ einen vierstimmigen gemischten Kammerchor genau festgelegte Rhythmen, Vokale, Konsonanten, Silben, und Worte so sprechen, daß unter Einschaltung der