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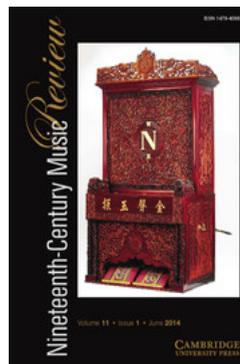
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Vibrato, the Orchestral Organ and the 'Prevailing Aesthetic' in Nineteenth- Century Symphonic Music

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The issue of vibrato's presence in the nineteenth-century orchestral string section has become controversial, with musicians often asked to accept the proposition that vibrato existed rarely, if at all. Fortunately an extensive, hitherto overlooked, body of primary source material exists that goes straight to the heart of the matter, offering a definitive answer to the question of whether or not vibrato was an intrinsic component of period orchestral string sonority. It comes from the organ literature and from the history of the instrument's evolution over the course of the long nineteenth century. A group of artists and artisans, working from approximately 1830 to 1930, documented the importance of vibrato to any attempt at reproducing, or at least approximating, the authentic timbre of the orchestral string section. Organ builders and performers noted vibrato's use both as an intrinsic constituent of string tone and as an actively applied expressive device. They discussed it extensively in their literature, gave their instruments the capacity to simulate its effects, and specifically notated its presence in their transcriptions of orchestral music. The information they have left behind dispels the modern myth of 'pure', vibratoless orchestral string tone as a timbral norm, and provides a truer sense of the era's prevailing aesthetic.

In 1878 the noted French physicist and engineer Gustave-Adolphe Hirn (1815–1890) published an essay in which he lamented the plague of vibrato then raging through the orchestral instruments, and by extension the orchestras, of his day:

The violin ... has on its conscience a mischief far more serious than any of those with which one may reproach the piano: to it belongs the inarguable paternity of the vibrato [*chevrotement*], of trembling or tremulous sounds; it is the violinists, in any case, that I heard for the first time practising this abominable ornament. Today, it is not possible to hear produced a pure and evenly sustained note. Flutes, bassoons, horns ... male and female human throats, all quiver mercilessly; the organ itself has even been endowed with a vibrato register!¹

Despite testimonial evidence such as this, the issue of vibrato's presence in the nineteenth-century orchestral string section has become controversial, with musicians often asked to accept the proposition that vibrato existed rarely,

¹ G.-A. Hirn, *La musique et l'acoustique: Aperçu général sur leurs rapports et sur leurs dissemblances* (Paris: Gauthier-Villars, 1878): 23. Translation mine.

if at all. Clive Brown's study *Classical and Romantic Performance Practice, 1750–1900* sets out this claim in detail,² and Brown's word on the subject has become gospel for the period performance movement. It is Brown, for example, who contributed the chapter on 'Performance Practice' in Barry Millington and Stewart Spencer's anthology *Wagner in Performance*; and there he propounds the notion that 'Wagner adhered to the prevailing aesthetic of a basically non-vibrato sound'.³

On closer examination, however, Brown's claims raise more questions than they answer, particularly when given this formulation:

Whereas, in the case of strings, flutes, oboes, and bassoons, vibrato has now come to be seen as a permanent colouring which may be intensified or removed for special effects, the opposite was the case throughout the nineteenth century: a basically non-vibrato sound was then seen as the norm and vibrato, of varied speeds and intensities, was added as a colouring for special notes within the phrase.⁴

Does Brown's statement demonstrate the likelihood of significant timbral differences between nineteenth-century and modern practice, or does it merely describe similar audible results from two slightly different perspectives?

This matters today because the period performance movement supports an extensive network of artists and organizations whose principal claim to recognition rests on the quantifiable difference between the sounds that they make and those produced by traditional ensembles. Crudely put, the greater the disparity, the more 'authentic' the result must be. Hence, we find conductor Roger Norrington writing the preface to Brown's book and denying the presence of vibrato in historical recordings of Mahler.⁵ Early music specialists such as Christopher Hogwood and Andrew Parrott now appear before traditional orchestras and propose to 'educate' performers on the correct style of playing nineteenth-century music. Eliminating vibrato has become standard practice, a new paradigm. At its most absurd, consider conductor Mario Venzago's Bruckner cycle, in which he seriously claims to distinguish 'romantic' non-vibrato from the more usual, baroque kind.⁶

Fortunately a very extensive body of primary source material that goes straight to the heart of the matter does exist, and it offers a definitive answer to the question of whether or not vibrato was an intrinsic component of period orchestral string sonority. It comes, as M. Hirn unwittingly hinted, from the organ literature, and from the history of the instrument's evolution over the course of the long nineteenth century. Here, a group of artists and artisans, working from approximately 1830 to 1930, documented the importance of vibrato to any attempt at reproducing, or at least approximating, the authentic timbre of the orchestral string section.

² See Clive Brown, *Classical and Romantic Performance Practice, 1750–1900* (Oxford: Oxford University Press, 1999): 555–7.

³ Barry Millington and Stewart Spencer, *Wagner in Performance* (New Haven: Yale University Press, 1992): 106–10.

⁴ Millington and Spencer, *Wagner in Performance*, 106–7.

⁵ Cited in David Hurwitz, 'So Klingt Wien: Conductors, Orchestras, and Vibrato in the 19th and Early 20th Century', *Music & Letters*, 93/1 (2012): 29.

⁶ See Venzago's comments in the booklet notes to his recording of Bruckner's Symphony No. 2 with the Northern Sinfonia on cpo 777 735–2 (2011).

This survey of the relevant literature on organ registration, construction and transcription, reveals the following facts concerning orchestral vibrato:

- The regular presence of pitch vibrato in orchestral music can be traced to the early decades of the nineteenth century, at a minimum.
- Orchestral vibrato is effectively continuous and intrinsic.
- There was no expectation of 'pure' string tone in the modern sense, as some members of the historical performance movement describe vibratoless ensemble timbre.
- The actual term 'vibrato' often refers to an explicit kind, while vibrato levels varied widely in actual performance.
- The decline of one type of vibrato cannot be used as prima facie evidence of a concurrent decline in any other type, or in vibrato levels more generally, although a distinct preference for pitch (as opposed to bow) vibrato is evident.

The evolution of the orchestral organ in the late nineteenth century thus reflects a long-standing tradition of vibrato performance practice, belying the notion of non-vibrato string timbre as the era's 'prevailing aesthetic'.

Organ Vibrato as Imitative Orchestral String Timbre

There are essentially two systems employed in creating vibrato on the organ: the Tremulant, a mechanical device which staggers the wind flow to the pipes with varying degrees of rapidity, and 'Celeste' tuning (to use the modern term), which involves opposing two or more ranks of pipes, with the additional ranks tuned slightly sharp or flat to the fundamental pitch. The result creates acoustic 'beats' that approximate a genuine pitch vibrato, although this analysis reveals that the Tremulant also can be used to stand in for the same effect.

A crucial point in considering these vibrato analogues on the organ lies in the fact that they are frequently the product of two or more ranks of pipes played together. This is invariably true of Celeste stops, and often the case when using the Tremulant, depending on which stops or larger divisions the device modifies. The need to blend the basic vibrato timbre with additional stops to create a desired sonority means that organ vibrato is 'orchestral' on its face. Imitative string vibrato in particular, as will be shown, naturally attempts to evoke the sound of an orchestral ensemble.

Barbara Owen, in *The Registration of Baroque Organ Music*, dates the emergence of the Tremulant to the middle of the sixteenth century.⁷ At roughly the same time, 'undulating' stops were appearing under a variety of names. Examples include the Fiffaro (variously spelled) and Voce Umana in Italy, and later the evocatively named Unda Maris ('Ocean Waves') in Germany.⁸ Both of these have their analogues in string playing: the bow vibrato or tremolo, and left-hand pitch vibrato. Each had become standard features of organ registration by the eighteenth century. Numerous organs in Bach's day contained both undulating stops and Tremulants,⁹ while string instruments were represented by

⁷ Barbara Owen, *The Registration of Baroque Organ Music* (Bloomington: Indiana University Press, 1997): 3.

⁸ Owen, *The Registration of Baroque Organ Music*, 54, 166.

⁹ See Christoph Wolff and Markus Zepf, *The Organs of J.S. Bach: A Handbook*, translated by Lynn Edwards Butler (Chicago: University of Illinois Press, 2012).

appropriately named stop categories: Gamba, Salicional, Dulciana, Geigen (Violins), and others.

The person credited with inventing, or at least perfecting, the first undulating string-toned stop was the great French organ builder Aristide Cavaillé-Coll (1811–1899), who called it the '*Voix-celestes*'.¹⁰ The stop consisted of two ranks of Gamba pipes, one tuned slightly sharp, and it first appeared in 1839 in the stop-list of his new organ at the Eglise de Saint-Gaudens, Paris.¹¹ In 1846, Cavaillé-Coll was attacked by Jean-Louis-Félix Danjou, the editor of the *Revue de la musique religieuse, populaire et classique*, for making instrument-named stops more imitative, a project deemed inappropriate for the performance of liturgical music in a church setting.¹² Cavaillé-Coll's reply goes directly to the point:

All I aspire to achieve, speaking for myself, is to give the various stops in the organ the tonal character of the orchestral instruments whose names they bear. In my view, strengthening the resemblance between organ stops and the instruments they imitate is improving their quality, not destroying their religious character, if indeed there is religious character in musical tones *per se*.¹³

In his *Voix-celestes*, Cavaillé-Coll attempted to imitate the tone of a group of string instruments playing with vibrato. As French diplomat and organ scholar Charles Marie Philbert noted in 1876, when describing the Celeste stops installed in the Cavaillé-Coll organ in the Palais de l'Industrie in Amsterdam, 'thus, it is by means of this arrangement, combined with the action of the swell (expression) chambers, that we are able to produce, ultimately, an approximate imitation of a string ensemble'.¹⁴ He further explains that 'the *vibrato* of the string instruments' is produced when 'the finger of the player oscillates alternately above and below its normal position, thus raising and lowering the tone in turns by a small quantity'.¹⁵

The very act of imitating this sonority presupposes its quotidian existence prior to Cavaillé-Coll's arrival in Paris in 1833. The use of orchestral pitch vibrato is well documented, for example, by Berlioz in an essay on Gluck's *Alceste*.¹⁶ When Berlioz came to Paris in 1821, the tradition of Gluck performance at the Opéra was still very much alive. Berlioz' description of Gluck's vibrato notation received practical corroboration with the publication in 1874 of the Pelletan-Damcke critical edition of *Alceste*. The score's preface addresses some of the work's performance issues, including Gluck's vibrato indications. The editors note:

The opinion of Berlioz is that the wavy line by no means indicates the usual tremolo (*tremolo ordinaire*). It is merely a matter, he says, of the finger of the left hand trembling while it presses the string; it thereby gives the sound a sort

¹⁰ Rollin Smith, *Saint-Saëns and the Organ* (Stuyvesant: Pendragon Press, 1992): 75.

¹¹ Jesse Eschbach, *Aristide Cavallé-Coll* (Berlin: Verlag Peter Ewers, 2012): 11. Cavaillé-Coll also used the singular, '*Voix Céleste*'.

¹² Fenner Douglas, *Cavaillé-Coll and the Musicians* (Raleigh: Sudbury Press, 1980): 53.

¹³ Douglas, *Cavaillé-Coll and the Musicians*, 54.

¹⁴ Cited in H.-J. Ply, *La facture moderne étudiée à l'orgue de St.-Eustache* (Lyon: Perrin et Marinet, 1880): 25. Translation mine.

¹⁵ Ply, *La facture moderne*, 25.

¹⁶ Published in 1862 in the collection *A Travers Chants*; see Hector Berlioz, *The Art of Music and Other Essays*, translated by Elizabeth Csicsery-Rónay (Bloomington: Indiana University Press, 1994): 111.

of undulation. We concur with this opinion willingly; and what is more we have confirmation from some of the artists who had the opportunity to perform the music of Gluck under the direction of Habeneck.¹⁷

Legendary conductor François Habeneck (1781–1849), famous for introducing the symphonies and concertos of Beethoven to French audiences, had become principal violin at the Paris Opéra in 1817 and remained director of the orchestra from 1821 to 1846. That is a quarter century of orchestral vibrato under his tenure alone, not just at the Opéra, but also with the Orchestre de la Société des Concerts du Conservatoire, which he founded in 1828 and led until 1848, and in whose concerts Gluck featured prominently.¹⁸

Since Gluck's notational habits were neither unique nor particularly unusual,¹⁹ there can be little question that orchestral string vibrato was familiar enough that Cavaillé-Coll's invention of the *Voix-celestes* was understood as the organist's closest approximation of the effect. Philbert confirms it, and so does Ernest M. Skinner (1866–1960), one of the major early-twentieth-century organ builders:

Organ strings [i.e. string-toned pipes] when used in two ranks of similar quality and tuned slightly apart, as in the *Voix Celeste*,²⁰ probably suggest, in overall effect, the nearest approach to orchestral strings possible. A violin produces a vibrato only equaled by the human voice. The organ string is least effective in this respect. The organ string is, apart from its out-of-tune wave, only to be modified *per se* by the swell-box. The orchestral strings change in intensity, quality, and attack, and are seldom level; a sympathetic vibration is continually uttered by the body of the instrument which is wholly lacking in the organ string. Their only similarity is a richness in harmonies. The utter inability of the organ string to follow the orchestral in its kaleidoscopic variety forbids approach to a real parallel.²¹

Skinner, writing in 1917, takes the existence of orchestral vibrato as a given fact. However, discussion of the degree to which the Celeste effect proved a convincing equivalent offers some startling insights into both the actual sound of the nineteenth-century orchestra and its perception by contemporary witnesses. The observations of French organist Alexandre Cellier (1883–1968) in his treatise *L'Orgue moderne* (1913, with a preface by the illustrious organ composer Louis Vierne) are particularly useful, in that he distinguishes with singular clarity between what the Celeste stop ideally represents and how it actually operates technically. Concerning the former, Cellier writes:

The *Voix Celeste* is nothing more than a Gamba tuned a little higher than the Gamba at the same pitch as the other stops. Joined together, as a result of the slight dissonance between the two stops, it produces *beats* [*battements*], or a kind of

¹⁷ Christoph Willibald Gluck, *Alceste*, ed. F. Pelletan and B. Damke (Paris: Richault, 1874): xvii.

¹⁸ Arthur Dandelot, *La Société des concerts du Conservatoire de 1828 à 1897* (Paris: G. Havard Fils, 1898): 32.

¹⁹ For a comprehensive modern scholarly view, see Erich Schenk, 'Zur Aufführungspraxis des Tremolo bei Gluck', *Anthony van Hoboken: Festschrift zum 75. Geburtstag*, ed. Joseph Schmidt-Görg (Mainz: B. Schotts Söhne, 1962): 137–45.

²⁰ For simplicity's sake, Skinner's spelling of 'Voix Celeste' will be used henceforth throughout this essay except where quoted sources specify otherwise.

²¹ Ernest M. Skinner, *The Modern Organ* (New York: H.W. Gray, 1917): 29–30.

vibrato analogous to that which the movement of the finger produces on the violin string, moving the pitch, making it oscillate in such a way within the limit of about a *comma*.²²

However, Cellier continues, 'one observes more exactly this phenomenon in the orchestra with an ensemble of violins playing in unison without *vibrato*; the slight differences in intonation inevitably produce the effect of the *Voix Celeste*'.²³

Nineteenth-century orchestras, then, used left-hand vibrato to greater or lesser degree to create a constantly variable sonority following the ebb and flow of the music (as Skinner suggested), but even if they did not, a type of pitch vibrato timbre was *always* present. This baseline timbre must have been strong enough, for imitative purposes, to be audible as a distinctive quality of the orchestral string ensemble. Transcriptions of works for string orchestra support this conclusion, even to the point where the vibrato persists despite the use of stops that do not even imitate string tone.

For example Edwin Lemare (1865–1934), the most highly acclaimed organ virtuoso of the early twentieth century, in his 1923 arrangement of the Adagietto for strings from Bizet's *L'Arlésienne*, features a melody played throughout by the 'Unda Maris 8' or soft Strings'. In a footnote to the score Lemare writes, 'on organs, where there are several undulating Wood stops, (Unda Maris) this melody will be found most effective if played on a combination of same, in preference to any String-tone'.²⁴ Although the string timbre is not preserved, the vibrato component of the original is – surely a significant fact.

Exactly the same phenomenon appears in Pittsburgh organist Harvey Gaul's (1881–1945) transcription of 'Åse's Death' from Grieg's *Peer Gynt* Suite No. 1 (1914). Gaul notes, 'Although Nos. II and III were orchestrated for strings alone, it is impossible on the organ to confine the registration to so-called "String-tone," as it lacks sufficient breadth'.²⁵ So, in addition to the *Voix Celeste*, Gaul calls upon both the Unda Maris as well as the Vox Humana (a stop almost invariably used with the Tremulant). In a movement lasting some 45 bars, only six lack a clear indication of vibrato timbre either alone or in combination with other stops.

Interestingly, Lemare transcribed the same work in 1909. He employed vibrato continuously, in a registration consisting initially of *Voix Celeste* 8', soft *Lieblich* 8', and Tremulant (to which is added the Vox Humana in bar seventeen).²⁶ This particular combination represents one of Lemare's basic choices for orchestral melodies demanding rich string timbres. He writes:

If the student has a fine Choir organ (of course, it must be enclosed in a separate Swell box), with plenty of string-toned stops and one or two soft orchestral reeds, above all, a good Tremulant, which affects the *whole* of the Choir, some of the most wonderful effects can be produced in playing the music of such writers as Wagner

²² Alexandre Cellier, *L'orgue modern* (Paris: Delagrave, 1913): 28. Translation mine.

²³ Cellier, *L'orgue modern*, 28–9.

²⁴ Edwin Lemare, *The Organ Music of Edwin Lemare*, Series II, Vol. I (Colfax: Wayne Leupold Editions, 1990): 94.

²⁵ Edvard Grieg, *First Peer Gynt Suite*, transcribed by Harvey Gaul (Boston: Boston Music, 1914): 9.

²⁶ Edwin Lemare, *The Organ Music of Edwin Lemare*, Series II Vol. XII (Colfax: Wayne Leupold Editions, 1994): 24.

and Tchaikowsky. Take, for example, the Andante Cantabile from the Fifth Symphony of Tchaikowsky, or the Overture to 'Romeo and Juliet',²⁷ and play those lovely, heart-stirring melodies scored for Violins (G string), Cellos, Horns &c., on such a Choir organ as above with Swell coupled, using the latter for the accompanying harmonies. Not only may the great melodies of Wagner and Tchaikowsky be treated in this way, but many others of an orchestral character, by such writers as Rheinberger, Widor, &c.... The so-called Vox Humana stop (if it is voiced very softly) used with the Celestes, Tremulant, and a soft Lieblich, to give a little body, is a valuable addition to 'String' or 'Harp effects'.²⁸

Lemare's colleagues agree with both the theory and practice of these observations. American organist, magazine editor, and educator Everett Ellsworth Truette (1861–1933) in his treatise *Organ Registration* (1919) states in connection with the Voix Celeste that,

the primary effect of the undulations is somewhat similar to the effect of a number of violins playing in unison. There is generally a slight difference in pitch between the instruments, which adds 'nerve' or 'vitality' to the ensemble. Likewise, the difference in pitch between the two ranks of a Voix Céleste gives 'nerve' and 'vitality' to the tone of the stop'.²⁹

Truette reserves the comparison to true vibrato to his description of the Tremulant (Tremolo), suggesting that 'the effect of a Tremolo on the tone of the pipes is somewhat similar to the effect of the shake of the left hand, with which players of the violin and violoncello produce a vibrato'.³⁰

American composer and organist Gordon Balch Nevin (1892–1943) draws the distinction between Voix Celeste and Tremulant this way in his *A Primer of Organ Registration* (1920):

Learn *when, and when not* to use tremolos and stops of the Celeste (vibrato) type; for many years it has been the fad of purists to practically insist that these stops were the desolation of all that was abominable – a viewpoint not without some foundation when based on early specimens of the stops in question. However, with the present perfection of the tremolo and the various beautiful String and Flute Celeste stops these mandates can well be relegated to the forgotten past; the modern tremolo is in reality a slow-speed vibrato – and the Celeste stops infuse an orchestral warmth in the same way the duplication of string instruments in the orchestra produces a 'liveness' of tone attainable in no other way. It may well be pointed out that the tremolo is most desirable with those stops which in the orchestral instruments of which they are the representatives are naturally susceptible to vibrato treatment, viz: the String stops (*Cello, Viol d'Orchestre, Viol Celeste, Vox Celeste*).³¹

Finally, British author George Laing Miller, author of *The Recent Revolution in Organ Building* (1909), possibly written at the instigation of organ builder and

²⁷ Transcribed by Lemare in 1901 and 1909, respectively.

²⁸ Edwin Lemare, 'The Art of Organ Playing', *The World's Best Music*, Vol. X (New York: The University Society, 1913): 315.

²⁹ Everett Ellsworth Truette, *Organ Registration* (Boston: C.W. Thompson, 1919): 47.

³⁰ Truette, *Organ Registration*, 60.

³¹ Gordon Balch Nevin, *A Primer of Organ Registration* (Boston: Oliver Ditson, 1920):

inventor Robert Hope-Jones,³² summarized the whole situation with Celeste stops in no uncertain terms:

Apart from the inherent beauty of the tones there is much to be said in favor of the presence of these stops—if the organ is to be used as an adjunct to, or a substitute for, the orchestra. The whole orchestra is one huge and ever-varying ‘Celeste’. Were it not so its music would sound dead and cold. Few of the instrumentalists ever succeed in playing a single bar in tune with the other components of the band.³³

The implications of these comments, and their embodiment in organ transcriptions of specific works, are profound for any understanding of the sound of the nineteenth-century orchestra. They establish unequivocally the fact that pitch vibrato was an intrinsic component of string timbre arising from the usual left-hand technique, but also at a more basic level simply from the disparity of intonation between individual players – a disparity that was regarded as aesthetically pleasing and natural. Vibrato was continuously present, and continuously variable.

The modern effort to eradicate orchestral vibrato in search of ‘authentic’ orchestral string timbre thus wholly lacks a historical foundation. Indeed, the closer to perfect intonation today’s period instrument ensembles get, the less ‘authentic’ they inevitably will sound. ‘Pure’ tone, the vibratoless sonority often described by historical performance scholars and players,³⁴ existed neither in the nineteenth-century orchestra, nor in the experience of period audiences. It is a myth.

Examples of Variable Vibrato: From Extreme to Intrinsic

‘Pure’ tone was not the only concept unfamiliar to nineteenth-century musicians. The word ‘vibrato’ in its modern sense, as the generic term for all pitch oscillation techniques, had not yet come into general use. As late as 1920 Balch-Nevin distinguishes between the ‘slow-speed vibrato’ of the tremulant and the warmth-creating but indefinable sound of the Celeste stops. In France alone, ‘*chevrote-ment*’ (Hirn), and ‘*battement*’ (Cellier) in addition to ‘vibrato’ have already been cited. In his still standard *Dictionary of Organ Stops* (1905/7) James Ingall Wedgwood writes, concerning the Tremulant:

The Vox Humana requires a Tremulant of rapid beat – a Vibrato in fact – but in the case of most other stops, whether flue or reed, one of less rapid pulsation is ordinarily conducive to superior results. Of course, those good folks obsessed by the *idée fixe* of rigidly austere and orthodox ‘legitimate’ organ music, those who will brook no such sacrilege as an ‘orchestral transcription’, regarding the organ as a mere mechanical machine for the grinding out of stoichiometrically accurate counterpoint, find themselves unable to tolerate the imbecile mock-pathos of the Tremulant. At the risk of incurring the ridicule of these puristic Hobbites, let it here be suggested that a well-equipped organ might profitably include two varieties of Tremulant, one of the *vibrato* or fan type, and one of powerful, slow pulsation.³⁵

³² David Fox, *Robert Hope-Jones* (Richmond: Organ Historical Society, 1992): 86.

³³ George Laing Miller, *The Recent Revolution in Organ Building* (New York: Charles Francis Press, 1909/13): 94.

³⁴ See Roger Norrington’s comments in Elizabeth Haddon, *Making Music in Britain: Interviews with Those Behind the Notes* (Burlington: Ashgate, 2006): 169.

³⁵ James Ingall Wedgwood: *A Comprehensive Dictionary of Organ Stops* (London: Vincent Music, 1905): 158.

This terminological imprecision concerning what does or does not constitute 'vibrato' has led to great confusion in describing nineteenth-century (and earlier) attitudes to its employment, most particularly to the notion that vibrato consisted primarily of an 'ornament' used in solo playing.³⁶ There can be little question that *certain kinds* of vibrato were so defined, but the organ literature places actual period practice in a broader musical context more applicable to ensemble performance.

Example 1 comes from the *Nocturne* (1904) by Gaston Dethier (1875–1958), who taught organ at the Institute for Musical Arts (later the Juilliard School) in the first half of the twentieth century. Scored for Cornopean with Tremulant, a reed stop supposedly imitative of the cornet, the melody is undulating at full force when Dethier asks for vibrato, by name. This is exactly the same situation found in countless nineteenth- and early-twentieth-century orchestral scores by noteworthy composers such as Rossini, Glinka, Borodin, Falla, Massenet, Tchaikovsky, Glazunov, Wagner, Raff, Sibelius, Mahler, Elgar, Debussy and R. Strauss, to mention just a few.³⁷ 'Vibrato' in these cases, as in the Dethier *Nocturne*, does not mean to use it where there had been none previously, but merely to add more for expressive emphasis to whatever already happens to be present.

Ex. 1 Gaston Dethier, *Nocturne* (New York: J. Fischer, 1904)

Such is the recommendation of reviewer Latham True in the June 1918 issue of *The American Organist*. After describing Dethier's work in frighteningly poetic terms,³⁸ True finally gets down to business when he advises, 'a little further on, at "vibrato," I again gradually intensify the tone-color, using perhaps the oboe and the Vox Celestis'.³⁹ In other words, vibrato can be applied cumulatively, across a broad expressive continuum, with the actual term reserved for the climax of the phrase or passage. The relative infrequency with which the word 'vibrato'

³⁶ For a typical formulation, see Colin Lawson and Robin Stowell, *The Historical Performance of Music: An Introduction* (Cambridge: Cambridge University Press, 2010): 55.

³⁷ Examples are too numerous to list, but from the orchestral literature include such works as Raff's Fifth Symphony, Mahler's Third Symphony, Sibelius' *Valse triste*, Strauss' *Ein Heldenleben*, Debussy's *La Mer*, and Elgar's Second Symphony.

³⁸ '... the spirits of trees and rocks and streams, singing each its life-melody, seem to weave dreams of beauty and wonder and mystery that are half tone, half perfume', etc.

³⁹ Latham True, 'Gaston M. Dethier *Nocturne*', *The American Organist* 1/6 (1918): 304–5.

Ex. 2 Richard Wagner, 'Liebestod' from *Tristan und Isolde*, transcribed by Archer Gibson (New York: Dover, 2005)

S Soft String Stops, with Vox Celestis, Viol d'Orchestre, & Tremolo
 G Flute 8' coupled S & C
 C Soft 8' Concert Flute, and Dolce, coupled S
 P To suit comb. in use, and always coupled to Sw.

RICHARD WAGNER

1813-1883

Transcribed by Arthur Gibson

Manuals.

Pedal.

ppp

pp

pp

S

Soft String Stops, with Vox Celestis and Viol. d'Orchestre. S&C Tremulos, if good.

add S pp Oboe

PS

appears in nineteenth-century scores cannot be used (as Brown maintains⁴⁰) to demonstrate its limited presence more generally.

There is perhaps no more vivid instance of this ability of the orchestra to add vibrato in layers of varying intensity than Example 2, Archer Gibson's (1875–1952) opulent transcription, from 1902, of Wagner's 'Liebestod' from *Tristan und Isolde*. In Gibson's score, everything is coupled to the Swell, which ideally features the Voix Celeste, soft string stops, Viol d'Orchestre, and both Swell and Choir Tremulants 'if good' – three levels of vibrato all combined. Gibson made his living playing recitals on the magnificent residence organs installed at great expense in the homes of America's upper crust. He was one of the most popular (and wealthy) organists of his day,⁴¹ and it may be stated fairly that transcriptions such as this accurately reflect the prevailing aesthetic.

Given the fact that vibrato could and did vary over a wide range of intensities and audible degrees, it should come as no surprise that finding just the right kind was a big problem for organ builders (and players), hence Gibson's reference to a 'good' Tremulant. What the orchestra did naturally and flexibly, the organ could only approximate rigidly and mechanically, as Skinner suggested. The most obtrusive type of vibrato, used to excess, was almost always objectionable. George Ashdown Audsley (1838–1925) in his seminal treatise *The Art of Organ Building* (1905) warns, concerning the Voix Celeste:

The only case in which we would advocate the introduction of a stop of this class, would be where there were several imitative string-toned stops inserted in any one manual division of an Organ, intended to represent the effect of a number of orchestral stringed instruments played together in unison. ... Nothing, however, approaching a disturbing tremolo should under any circumstances be tolerated.⁴²

⁴⁰ Millington and Spencer, *Wagner in Performance*, 109.

⁴¹ See Rollin Smith, *The Aeolian Pipe Organ and its Music* (Richmond: Organ Historical Society, 1998): 244–56.

⁴² George Ashdown Audsley, *The Art of Organ-Building* (New York: Dodd, Mead, 1905): 573.

Such strictures mirror similar remarks found in period violin treatises cautioning against excessive vibrato in solo playing. Still, it must be stressed in connection with the orchestra that vibrato as a distinct pitch oscillation usually cannot be perceived at all. Audsley's remarks thus point to the existence of an intrinsic vibrato timbre in which the determinant criterion for acceptability is not so much whether it is continuous as whether it is unpleasantly obtrusive in its effect on the tone.

In fact, multiple organ transcriptions of the same orchestral score confirm the presence of this intrinsic vibrato string timbre. Consider the Prelude to Wagner's *Lohengrin*. The opening is scored for violins divided into four parts, plus four solo violins to assist with the harmonic tones in the first bars.⁴³ A popular work among organists, four transcriptions dating from 1882 to 1913 each simulate the orchestra's vibrato differently but consistently. The earliest (Ex. 3a), by American organist S.B. Whitney (1842–1914), reveals a registration for Dulciana at the start, plus the Swell Violino 4' with Tremulant for the harmonics in bars two and four, joined by 8' Violas as the melody begins. Both Choir and Great are coupled to the Swell, and the Tremulant remains on until the central climax, returning immediately thereafter.

Ex. 3a **Richard Wagner, Prelude to *Lohengrin*, transcribed by S.B. Whitney (Boston: Arthur P. Schmidt, 1882)**

Arr. by S. B. WHITNEY.

Sw. Violino 4ft. with Trem.

Manuals.

Pedal.

Ped. 16ft Bourdon coupled to Ch. or Gt.

Ex. 3b **Richard Wagner, Prelude to *Lohengrin*, transcribed by Edwin Lemare (Mainz: B. Schotts Söhne, 1903; rep. Kalbe, 2010)**

Lohengrin
Vorspiel

R. Wagner transcribed by Edwin H. Lemare

Swell - V. Celeste
Great - Soft 8 ft.
Choir - Soft 8 & 4 ft.
Pedal - Soft 8 ft only.

Langsam Ch. Sw. Ch. Sw.

Manual

⁴³ See Richard Wagner, *Lohengrin* (Leipzig: Breitkopf & Härtel, 1887; rep. New York: Dover Editions, 1982).

Renowned turn-of-the-century organist Clarence Eddy (1851–1937), whose transcription appeared in 1894, plays the first four bars of the Prelude on the Swell, Violins 4'; then, as soon as the melody begins, Eddy adds the string-toned Salicional 8' and Tremulant. Again, both the Great and the Choir are coupled to the Swell, and so the vibrato timbre remains effectively continuous as the music proceeds.⁴⁴ German composer Siegfried Karg-Elert (1877–1933), famous for his harmonium pieces, transcribed the Prelude for organ in 1913. He begins much as does Eddy, but replaces the Tremulant with the Voix Celeste.⁴⁵

Between Eddy and Karg-Elert comes Edwin Lemare, in 1903 (Ex. 3b). Lemare was known particularly for his Wagner transcriptions, many of which remain in the modern repertoire. He was hired by Schott to transcribe 'everything by the great master that was possible for the organ'.⁴⁶ Like Karg-Elert, Lemare chose the Voix Celeste for his string vibrato simulation, but unlike his colleagues, he also attempted in the first four bars to reproduce accurately the subtle distinction between the initial vibrato of the strings and the vibratoless timbre of Wagner's harmonic tones (the reverse of Whitney's approach).

It could be argued that the presence of vibrato in any single transcription represents little more than the arranger's personal taste, but not when multiple versions of the same work produced over a period of three decades reveal the same timbral effects. All four transcriptions agree that the music demands continuous vibrato, notwithstanding small individual variations in realizing the subtleties of Wagner's scoring on the organ. More significantly, the orchestral score includes none of the usual verbal or notational vibrato indications, suggesting that vibrato timbre was largely intrinsic. String players used it without the need for further prompting.

Whitney's arrangement of the *Lohengrin* Prelude appeared during the composer's lifetime, so it cannot be seen as evidence of a later timbral or expressive aesthetic imposed on an earlier musical style. However, to lend further credence to these transcriptions as accurate reflections of the prevailing aesthetic, it would be helpful to consider some further examples created contemporaneously with the originals. Conveniently, such cases are ready to hand.

For example, in 1899 Lemare transcribed the Prelude to Humperdinck's *Hansel und Gretel*, which had premiered in 1893. Humperdinck was present at a performance of Lemare's transcription and the two actually met.⁴⁷ In Lemare's version, which includes both organ registration and instrumental cues, the first few bars are scored for horns, with the subsequent entry of the vibrato strings imitated by the Voix Celeste of the Swell.⁴⁸

Similarly, organist and educator Clarence Dickenson's (1873–1969) transcription of the 'Ronde des princesses' from Stravinsky's *The Firebird* (1910) appeared as early as 1917. An anonymous contemporary review in *The American Organist* described it as a work of 'the ultra-modern school' that will 'delight the hearts of

⁴⁴ See Clarence Eddy, *Eddy's Concert Pieces for Organ* (Boston: Oliver Ditson, 1896): 95.

⁴⁵ Siegfried Karg-Elert, *Richard Wagner Album*, nos. 6 and 7 (Munich: Leuckart (rep. Thomi-Berg), 1913): 30.

⁴⁶ Edwin H. Lemare, *Organs I Have Met* (Los Angeles: Schoolcraft, 1956): 23.

⁴⁷ Lemare, *Organs I Have Met*, 23.

⁴⁸ Engelbert Humperdinck, Prelude to *Hansel und Gretel*, arranged by Edwin H. Lemare (Mainz: B. Schotts Söhne 1903 rep. Kalbe, 2010).

the modernly inclined'.⁴⁹ Dickenson's transcription has the opening woodwind solos played by the Flute Celeste of the Choir Organ. The addition of the Viole d'Orchestre and Celeste stops on the Swell signals the vibrato-tinged entry of the strings.⁵⁰

A passage from the works of French master Alexandre Guilmant (1837–1911) proves especially dispositive, since the transcriber and composer are one and the same person. In this case, Guilmant arranged the 1906 Eighth Sonata for organ as his Second Symphony. The fugato at the heart of the slow second movement, Adagio con affetto, is marked to be played with vibrato by the Voix Celeste plus Gamba 8' on the Swell (*Récit* in French; the registration is given at the movement's start). In the orchestral version this fugato is scored, naturally, for the strings, significantly without the need to mention or otherwise notate vibrato timbre specifically.⁵¹ So the process of transcription from orchestral strings to vibrato stops works in the opposite direction as well.

The works of the French organ school offer numerous examples of this process. When Widor arranged the Andante (third movement) of his Second Organ Symphony for strings plus organ in 1882, he reinstated the original Swell registration of the organ part (flutes 8', 4') from an earlier edition of the version for organ solo,⁵² despite the fact that he had recently updated the registration to include the Voix Celeste.⁵³ Evidently, the presence of the orchestral strings rendered the organ's vibrato unnecessary. Saint-Saëns, on the other hand, combined the organ's accompanying Voix Celeste, pianissimo, with the strings' *molto espressivo* reprise of the Adagio's main theme in his famous 'Organ' Symphony of 1886.⁵⁴ Can anyone seriously maintain that the organ's vibrato was acceptable but that the instruments playing the melody necessarily avoided it?

We find an especially fascinating early example of orchestral transcription in the 1860s arrangements of all of the slow movements from Beethoven's symphonies by renowned French organist and *Conservatoire* professor Edouard Batiste (1820–1876). Pared down for liturgical use and retitled *Élévation*, *Offertoire*, or *Communion*, Batiste applied to Beethoven his personal recipe for imitative string timbre based on the capacity of his own organ at St Eustache, and consisting of Oboe 8', Bourdon 8', Harmonic Flute 8', and Tremulant. 'This delicious mélange imitates the violoncello perfectly',⁵⁵ he enthused in the registration list preceding his transcription of the 'Pastoral' Symphony's second movement. It reappears in virtually all of his Beethoven symphony transcriptions, most notably that of the Allegretto from the Seventh Symphony, where its use is continuous throughout the entire movement.⁵⁶

⁴⁹ *The American Organist* 1/5 (1918): 290.

⁵⁰ Igor Stravinsky, 'Ronde des princesses' from *The Firebird*, transcribed by Clarence Dickenson (New York: H.W. Gray, 1917)

⁵¹ Compare Alexander Guilmant, Adagio con affetto from *Symphony No. 2* (London: Schott, 1911) to the same movement in Organ Sonata No. 8 (Mainz: Schott's Söhne, 1907).

⁵² Charles-Marie Widor, *Symphonie pour orgue et orchestra opus 42[bis]*, ed John R. Near (Middleton: A-R Editions, 2002): 51.

⁵³ Charles-Marie Widor (John R. Near, ed.), *Symphonie II in D major* (Middleton: A-R Editions, 2008): 15.

⁵⁴ Camille Saint-Saëns, *Symphony No. 3 in C minor "Organ"* (Mineola: Dover, 1994): 64.

⁵⁵ Edouard Batiste, *Fragments des Neuf Symphonies de Beethoven, No. 6* (Paris: Richault, n.d.): 14. Translation mine.

⁵⁶ Edouard Batiste, *Compositions and Transcriptions pour orgue* (Le Vallier: Delatour, 2004): 19–26.

Again, it is worth noting that none of these examples contains any specific mention of vibrato by name in the orchestral scores, and yet the organ transcriptions (or originals) all point to its intrinsic and necessary presence.

The Preference for Pitch Vibrato

These various transcriptions also document an issue that appears frequently in the organ performance literature throughout the nineteenth and early twentieth centuries: the search for superior, more naturally 'string-like' vibrato equivalents than the often mechanically challenged Tremulant. This discussion has significant implications for orchestral performance practice, too, especially in the first half of the nineteenth century. As Balch Nevin wrote, 'It may be remarked that where these [Celeste] stops are provided the player need not employ the tremolo to anything like the extent necessary when such is not the case, as the stops themselves provide the vibrato formerly the exclusive production of the tremolo'.⁵⁷

Noted Swiss organ pedagogue Carl Locher (1843–1915) seconds this opinion in speaking of the Unda Maris: 'By the use of this stop, a Tremulant may be dispensed with, at least in quite small organs'.⁵⁸ Taking a long step back, Wedgewood cited G. C. Fr. Schlimbach's 1843 treatise *Über die Struktur, Erhaltung, Stimmung und Prüfung der Orgel* to the effect that, 'Such an undulatory stop [the Bifara] must be most welcome to the organ player, since a right-minded organist can scarcely use the Tremulant, so gimcrack is it usually ('indem sie gewöhnlich so beschaffen sind'), as to be insufferable or even ludicrous'.⁵⁹

The preference for the pitch vibrato of undulating stops over the Tremulant evidently was widespread in this earlier period. In discussing Italian organs of the late eighteenth and early nineteenth centuries, Barbara Owen observes: 'Curiously, the ubiquitous Tremulant was usually absent, perhaps because, as in the preceding period, the undulating Voce Umana made it unnecessary'.⁶⁰ Organ chronicler Nicholas Thistlethwaite points to a similar rejection of the Tremulant in England at about this same time.⁶¹

Although the Tremulant's existence never was seriously endangered, its suppression around the turn of the nineteenth century has a direct and fascinating correlation to the contemporary world of violin playing, for it was precisely at this time that the string equivalent of the Tremulant, the Baroque bow vibrato,⁶² fell out of use. Indeed, the editors of the Pelletan-Damcke *Alceste*, in discussing the presence of vibrato in the Opéra orchestra under Habaneck go on to observe that, 'this vibrato didn't just encompass movement of the finger of the left hand –the bow as well, without leaving the string, was required to assist with a succession of undulating movements. Performers today no longer know this genre of vibrato'.⁶³

⁵⁷ Balch Nevin, *A Primer of Organ Registration*, 92.

⁵⁸ Carl Locher, *Dictionary of the Organ*, translated by Claude P. Landi (London: Kegan Paul, Trench, Trübner, 1914): 183.

⁵⁹ Wedgewood, *A Comprehensive Dictionary*, 157.

⁶⁰ Owen, *The Registration of Baroque Organ Music*, 222.

⁶¹ Nicholas Thistlethwaite, *The Making of the Victorian Organ* (Cambridge: Cambridge University Press, 1990): 278.

⁶² See Hector Berlioz and Richard Strauss, *Treatise on Instrumentation*, translated by Theodore Front (New York: Dover, 1991): 19.

⁶³ Gluck, *Alceste*, xvii.

Abbé Terence Joseph O'Donnelly mentioned the same state of affairs in his 1841 *The Academy of Elementary Music*. O'Donnelly called vibrato 'tremolando', which he described as:

a term formerly employed by the Italians in violin playing, to indicate several strokes of the bow in quick succession (according to the style) on the same note, in order to produce a quivering kind of sound, which they no longer suffer in their music; neither do they make mention of the term. Its equivalent is expressed in our music, by the word close-shake, which is much better obtained by pressing the finger that marks the note, firmly, upon the string, while the wrist is made to spring by stiff and imperceptible movements.⁶⁴

O'Donnelly reserved the word 'vibrato' exclusively for vocal music, stating that, 'When the tremolando is to be articulated by the voice, the word *vibrato* is written above the passage.'⁶⁵

The history of the Tremulant and the various undulating stops in the early nineteenth century provides a more complete picture of the vibrato situation than that described by the contemporary violin literature alone. Specifically, as O'Donnelly corroborates, it shows that a qualitative decline in available vibrato methods cannot be equated with a quantitative decline in the use of vibrato timbre generally.⁶⁶ Just consider the remarkable fact that after the demise of bow vibrato, which had been described for centuries as having been modelled on the organ Tremulant,⁶⁷ the authorities cited here simply redefine the resurgent Tremulant as producing an effect equivalent to the violin's *pitch* vibrato.

Thus Joseph Regnier, in the major nineteenth-century French organ treatise *L'orgue, sa connaissance, son administration et son jeu*, published at precisely mid century, observes ruefully: 'already tremulous voices have come back into fashion, and I no longer know a single violinist for whom each finger of the left hand has not become a soft Tremulant [*tremblant-doux*]'.⁶⁸ Furthermore, Gaevart clearly explains that bow vibrato as an orchestral practice was supplanted by the modern string tremolo;⁶⁹ in other words, by the need for a bolder effect better suited to the romantic style. Both of these sources suggest that vibrato levels, if anything, intensified during this period even if one method of producing it vanished.⁷⁰

The Rise of the Orchestral Organ Confirms the True Prevailing Aesthetic

While vibrato in the orchestra already has been shown to date back to the early 1800s, the transcriber's use of detailed registrations signalling its presence in

⁶⁴ Terrence Joseph O'Donnelly, *The Academy of Elementary Music* (London: Novello, 1841): 170.

⁶⁵ O'Donnelly, *The Academy of Elementary Music*, 171.

⁶⁶ As Brown theorizes in *Classical and Romantic Performance Practice*, 527–9.

⁶⁷ See, for example, Jean-Jacque Rousseau, 'Tremblement', *Dictionnaire de Musique*, II (Paris: Duchesne, 1767): 287.

⁶⁸ Joseph Regnier, *L'orgue, sa connaissance, son administration et son jeu* (Nancy: Wagner, 1850): 179–80. Translation mine.

⁶⁹ François-Auguste Gevaert, *Nouveau traité d'instrumentation* (Paris: Lemoine and Fils, 1885): 33.

⁷⁰ Such claims always tend to be relative; Emil von Reznicek specifically asks for true bow vibrato ('tremolo ondulé') as a special effect in his tone poem *Schlemihl* of 1912, ten bars before Figure 3 in the E.N. von Reznicek Edition (Berlin, 1913).

ensemble string timbre could not reflect this fact consistently until close to the end of the nineteenth century. The widespread emergence of *published* transcriptions such as Edwin Lemare's, in which he attempts to duplicate orchestral timbres, required the creation of a new 'organ infrastructure' as Lemare himself had previously suggested. This meant a substantial population of modern instruments containing the latest mechanical innovations and imitative stops, running on reliable sources of electricity and wind, and housed in secular performance venues. Two figures in particular, George Ashdown Audsley and Robert Hope-Jones, offer paradigmatic examples of how Cavaillé-Coll's initial efforts at recreating ensemble string sonority culminated in the orchestral organs of the late nineteenth and early twentieth centuries.

In the 1880s Audsley provided the most comprehensive theory of the orchestral organ to that date, in his 'Notes on the Concert Room Organ', a series of articles published in *English Mechanic and World of Science*. In the 21 September 1888 instalment, he asserted 'the massing of imitative string-toned strings, under proper conditions, in the Concert-room Organ, is as important, from a musical point of view, as the massing of all the stringed instruments in the orchestra; and how this fact has remained unrecognized by the designers of our immense Organs is, to say the least of it, remarkable'.⁷¹

Only in 1904 were Audsley's ideas concerning the design of the orchestral organ realized, in what was then the largest organ in the world, built for exhibition at the Louisiana Purchase Exposition in St Louis. The instrument was truly vast: approximately 10,000 pipes, 140 stops and five manuals. *Scientific American's* 28 April 1904 issue featured a photo of a Shetland pony standing inside the largest (32') pipe.⁷² Audsley himself wrote the brochure on the project for the builder, the Los Angeles Art Organ Co., which promptly went bankrupt for its pains.⁷³

Citing the 1887–88 *English Mechanic* articles 'from the pen of an organ expert of international fame', Audsley in his brochure chastised his European colleagues for their 'circumscribed ideas and conservative habits', which made it impossible for them to 'avail themselves of the valuable and progressive suggestions freely offered them'.⁷⁴ The organ's new compound division, containing the two orchestral subdivisions of strings and winds, Audsley modestly asserted, was capable of producing 'no fewer than seventeen billion, one hundred and seventy-nine million, eight hundred and sixty-nine thousand, one hundred and eighty-three (17,179,869,183) distinct tonal and expressive combinations or effects ...'.⁷⁵ This instrument still exists, as the nucleus of the still larger and even more orchestrally opulent Wanamaker organ in Philadelphia.

Audsley's aesthetic nemesis was organ builder Robert Hope-Jones (1859–1914). Like Audsley, Hope-Jones got his start in England, but whereas Audsley had come to America in the 1890s to take advantage of its more progressive attitude, Hope-Jones arrived in 1903 to escape possible prosecution on a morals charge. He was, above all, an inventor. He pioneered the use of electricity, redesigned the organ

⁷¹ George Ashdown Audsley, 'Notes on the Concert-Room Organ—VII', *English Mechanic and World of Science* (28 Sept. 1888): 85.

⁷² Helen Lukens Jones, 'The Greatest of Pipe Organs', *Scientific American* 90/17 (23 April 1904): 329.

⁷³ See Ray Biswanger, *Music in the Marketplace: The Story of Philadelphia's Historic Wanamaker Organ* (Bryn Mawr: Friends of the Wanamaker Organ, 1999): 33.

⁷⁴ George Ashdown Audsley, *The Largest Organ in the World* (Los Angeles: Los Angeles Art Organ, n.d.): 4.

⁷⁵ Audsley, *The Largest Organ in the World*, 12.

console and created a wide variety of new stops, among many other innovations.⁷⁶ Rejecting the 'old departments of Pedal, Great, Swell, Choir, and Solo'⁷⁷ in favour of a console organized by instrumental timbre (woodwind, brass, strings, percussion), Hope-Jones stated that his ideal string department contained, 'a couple of mild and robust Gambas, two or three very keen Viol d'orchestres, a Quintaton Flute for furnishing the deep body tone often heard in strings, a Vox Humana Celeste, and perhaps my new Vox Viola – in fact any stops that go to make up a thrilling mass of "live" string tone'.⁷⁸

Through his association with the Wurlitzer firm, from 1910, Hope-Jones's newly invented 'Unit Orchestra', especially designed for use in cinemas, quickly evolved into the 'Mighty Wurlitzer' theatre organ.⁷⁹ Orpha Ochse summarizes his importance succinctly in *The History of the Organ in the United States*: 'It would seem that Hope-Jones did not so much alter the course that organ design was taking as to hurry it along its chosen route. He was the supreme spokesman and the extreme exponent of the new style'.⁸⁰

Although Audsley and Hope-Jones approached the problem from very different directions – the former through expansion of traditional resources, the latter through technical innovation and experimentation – they were united in the belief that the modern organ could replace the orchestra convincingly, a notion eagerly embraced by consumers and manufacturers in the days before broadcasting and recording. The trends represented by the ideas of Audsley and Hope-Jones merged most fruitfully in the wave of residence organs crafted primarily for the American market in the first decades of the twentieth century (and with which both men were associated). These instruments came equipped to be played both manually and automatically, via perforated paper rolls similar to those used in player pianos and reed organs (harmoniums). Their unique design and purpose was summarized by Aeolian Co. manager John W. Heins in 1904:

When the American people of wealth order a pipe-organ for their homes, they almost invariably want its tone to be orchestral in character rather than churchy, and this very reasonable desire makes necessary a change in the scheme of the organ.⁸¹

The Aeolian and other residence organs truly were, 'The Home Orchestra of the Twentieth Century'.⁸² Rollin Smith explains that in order to make the arcane details of organ construction, stop terminology and orchestral colouring self-evident to its upper-class clientele, in 1907 Aeolian

adopted an orchestral nomenclature that every businessman could understand and reduced all stop identification to descriptions of tone quality. .. Assuming that a violinist's vibrato would be more familiar than the church organist's Vox Celeste, Aeolian called their celeste rank a Vibrato String.⁸³

⁷⁶ Fox, *Robert Hope-Jones*, 129–80.

⁷⁷ Cited in Orpha Ochse, *The History of the Organ in the United States* (Bloomington: Indiana University Press, 1975): 336.

⁷⁸ Ochse, *The History of the Organ in the United States*, 336.

⁷⁹ John W. Landon, *Behold the Mighty Wurlitzer* (Westport: Greenwood, 1983): 6–7.

⁸⁰ Ochse, *The History of the Organ in the United States*, 338.

⁸¹ 'Fine Aeolian House Organ', *The Music Trades* (23 April 1904), cited in Smith, *The Aeolian Pipe Organ*, 325.

⁸² Smith, *The Aeolian Pipe Organ*, 29.

⁸³ Smith, *The Aeolian Pipe Organ*, 34.

One Aeolian organ roll has particular significance for this study: No. 51038, released in 1903, and containing the Prelude to *Lohengrin* 'arranged for the Aeolian Pipe Organ by Walter Damrosch'.⁸⁴ The stops that Damrosch (1862–1950) selects for the opening bars of the prelude are Tremolo, Strings (P and PP), and Flute (High), which is consistent with the vibrato sonority observed in the prior four transcriptions of this same piece. What makes this particular example so helpful is that it comes from a conductor who was not only renowned, but of unique pedigree.

In 1857 Liszt had hired Damrosch's father Leopold (1832–1885), a violinist and rising conductor, as violin soloist in the Weimar Court Orchestra.⁸⁵ Liszt had conducted the 1850 premiere of *Lohengrin* and it was still in the repertoire of the Court Theatre when Leopold arrived.⁸⁶ In Weimar, Damrosch met and married singer Helene von Heimbürg, who created the role of Ortrud in the same opera.⁸⁷ The family emigrated from Germany to New York in 1871. In 1884/5, Walter Damrosch assisted his father in preparing the first season of German opera at the new Metropolitan Opera House,⁸⁸ where *Lohengrin* was among the works performed. At his father's untimely death from pneumonia, in February 1885, Walter took over the ensuing tour and finished the season in Boston with performances that included Gluck's *Orpheus* (a new offering), as well as his father's carefully prepared productions of *Die Walküre* and *Lohengrin*.⁸⁹ If anyone can confirm, then, that orchestras had been using vibrato since the time of *Lohengrin*'s Weimar premiere in 1850, it is Walter Damrosch.

However, there is one additional chapter to this story. Liszt conducted four Gluck operas in Weimar during the 1850s, the most by any single composer: *Iphigenia in Aulis*, *Orpheus and Eurydice*, *Armida*, and *Alceste*.⁹⁰ He had had ample opportunity to hear Gluck's works in Paris under Habeneck in the 1820s and 1830s, and he performed with the conductor at the *Conservatoire* concerts starting in April, 1835.⁹¹ Indeed *Alceste*, the object of his best friend Berlioz's vibrato observations, was staged in 1858 during Leopold Damrosch's tenure in the Weimar violin section.⁹² Leopold and Walter Damrosch, in turn, included Gluck in their repertoire at the Metropolitan. The use of vibrato in Gluck, combined with that in *Lohengrin*, reveals a consistent orchestral vibrato presence running like an unbroken thread through the entire long nineteenth century.

Aeolian's String Division proved so popular that by 1923 the firm had introduced both a dedicated Vibrato Organ, consisting of string and flute

⁸⁴ The author wishes to acknowledge very gratefully the assistance of Nelson Barden, organ restorer and historian, for his invaluable insights into the history and technical details of Aeolian residence organs, and Robert W. Taylor, owner of Roll No. 51038, for making available photographs of the label information and stop-list.

⁸⁵ Leopold Damrosch, *Symphony in A Major*, ed. Kati Agócs (Middleton: A-R Editions, 2005): X.

⁸⁶ Alan Walker, *Franz Liszt: The Weimar Years, 1848–1861* (Ithaca: Cornell University Press, 1989): 286–95.

⁸⁷ Walker, *Franz Liszt: The Weimar Years*, 484.

⁸⁸ Walter Damrosch, *My Musical Life* (New York: Scribner's, 1926): 57.

⁸⁹ Damrosch, *My Musical Life*, 60.

⁹⁰ Walker, *Franz Liszt: The Weimar Years*, 286–95. Liszt's tone poem *Orpheus* premiered in 1854 as the prelude to Gluck's opera on the same subject, and his *Tasso* was dedicated to Leopold Damrosch.

⁹¹ Dandelot, *La Société des concerts du Conservatoire*, 31–2.

⁹² Walker, *Franz Liszt: The Weimar Years*, 292.

Celestes, plus a Vox Humana and Tremolo, as well as an even more specifically constituted Orchestral Organ featuring vibrato strings, plus basic winds and brass.⁹³ These specialized products represented the logical culmination of the process inaugurated by Cavallé-Coll in the 1830s. The sound of the orchestra shaped the organ's evolution over the course of the nineteenth century and into the twentieth. The instrument's mechanical development thus bears witness to the presence of an intrinsic vibrato timbre in the string ensemble.

This last observation suggests an answer to the question of how musicians, conductors and orchestral string players in particular, should approach the performance of nineteenth-century music. The fact that organ builders felt obliged to lavish nearly a century of attention on the mechanics of vibrato in order to produce a convincing imitation of ensemble string timbre confirms both its importance and consistent presence over time. Practical parameters governing organ construction leave little room for costly features that will seldom, if ever, be used. Ultimately, there is no need to worry about whether vibrato was 'in' or 'out' during this period. It was 'in' to the degree that customers regularly were willing to pay extra for it, and there can be few stronger endorsements than that.

The questions then become 'When to use it?' and 'How much?' The various transcriptions examined here reveal that vibrato often was employed continuously, within a wide range of intensities determined by the sensibilities of the performer and the dictates of the music – much as it is today – even though there is evidence that nineteenth-century string sections tolerated players with greatly differing abilities and habits in their handling of vibrato. For example, in 1909 British-American violinist Edmund Severn (1862–1942) observed that 'orchestral and other ensemble players are frequently deficient in vibrato playing as are many teachers who have been long away from the public as soloists, and who are away perhaps for that very reason, and, who, at any rate discourage the use of vibrato by their pupils, thereby causing much harm'.⁹⁴ Nevertheless, the practical reality of blended tone within the ensemble suggests that modern orchestras produce a sonority closer to actual period style than those that suppress vibrato entirely, or nearly so, and call the result 'authentic'.

Furthermore, the relatively stable presence of vibrato over the course of the nineteenth century means that modern playing conventions may be viewed as legitimate evidence of ongoing performance traditions. Walter Damrosch was born in 1862, knew Liszt, and studied with Hans von Bülow. He died in 1950, in the post-War era of 'continuous vibrato' (allegedly) – and yet we see him using it in 1903 in a work that Liszt premiered in 1850, one whose idiomatic performance style Damrosch was uniquely positioned to transmit. Similarly, it should come as no surprise that the conductor Bruno Walter remarked in 1960 that the contemporaneous sound of the Vienna Philharmonic was substantially identical, vibrato included, to that which he first heard in 1897.⁹⁵

In other words, there is no nineteenth-century 'anti-vibrato zeitgeist'. Indeed, all such generalizations are suspect. The exaggerated, monotonous, 'continuous vibrato' offered by the period instrument movement as the acme of bad style is as much an illusion as the theoretically 'pure tone' that is lauded in preference. As this study shows, orchestral vibrato is both *variable* and *natural*, the inevitable

⁹³ Smith, *The Aeolian Pipe Organ*, 41.

⁹⁴ Edmund Severn, 'The Vibrato', *The Etude*, 27/5 (1909): 347.

⁹⁵ Cited in David Hurwitz, 'So Klingt Wien', 47.

consequence of group performance. Accordingly, its free use as an expressive tool should be viewed as a legitimate artistic exploitation of the string ensemble's intrinsic timbral character. It is no coincidence that the authorities cited above often describe orchestral strings as 'live' or 'warm' due to the presence of vibrato, and 'dead' or 'cold' in its absence.

The legacy of the orchestral organ represents an invaluable snapshot of nineteenth-century orchestral sonority in the days before recordings, allowing us to see, and even hear, the reality of what has hitherto been the object of so much speculation and hypothesizing. Organ builders and performers noted vibrato's use both as an intrinsic constituent of string tone as well as an actively applied expressive device. They discussed it extensively in their literature, gave their instruments the capacity to simulate its effects and specifically notated its presence in their transcriptions of orchestral music. In the process they dispel the modern myth of 'pure', vibratoless orchestral string tone as a timbral norm and provide a truer sense of the era's prevailing aesthetic.