

THE INSTRUMENTS OF THE ORCHESTRA



written and narrated by
Jeremy Siepmann

**AUDIO-
ORIGINAL**

8.558040-46D

The Instruments of the
Orchestra

Contents	Page
Preface	4
1. Track Lists	5
2. Historical Profiles of the Major Instruments (and some others)	57
3. The Greatest Instrument Makers	93
4. Instrumental Typesetting	101
5. The Art of Orchestration and Transcription	103
6. The 'Original Instrument' Debate	109
7. Orchestral Seating Plan	115
8. Size and Constitution	118
9. A Guide to Further Listening	119
10. Recommended Reading	124
11. Spoken Text	127
12. Glossary	198
13. About the Author	202

Preface

Despite its conventional title, this is a far from conventional approach to a standard subject, and not only in its bulk. But its bulk should be explained. Rather than being simply a guided tour of the standard instruments in the orchestra, it amounts to a series of portraits of the instruments in their totality. Thus we meet them in a number of widely differing contexts (orchestral, of course, but also solo and in sundry instrumental groupings) and we hear them transformed by a wide range of techniques. We hear them in folk music – from many different countries – and we hear them in forms both ancient and modern. The violin being the very backbone of the orchestra, from the seventeenth century to the present, we spend the whole of CD 1 in its company, exploring the full range of its multifaceted character, from the sensuously seductive to the positively chilling, from the celestial to the diabolical. In addition to the regular members, we meet such exotic orchestral instruments as the other-worldly ondes martenot and the wind machine, and encounter, too, such unexpected interlopers as banjos, bagpipes, kazoos, chains, coconuts, Parisian typists, six-shooters, taxi horns, and a flock of migrating swans. Nor do we hear just snippets, surgically removed as evidence, lecture-fashion. Often we hear complete movements, drawn from the entire history of orchestral evolution. This is emphatically not, however, an extended lecture – or at least not *only* that. And while it isn't just an instrumental recognition game either, it can certainly, and profitably, be used as such: most of the musical examples, excepting the most fragmentary, are individually indexed and can therefore be programmed to run without verbal commentary, and in any order. However you care to describe it, though, whether you're a novice or a connoisseur, the hope is that you will find here a nourishing as well as informative tour of a fascinating world, and above all, that its most lasting contribution will be a thoroughly musical, hence enjoyable, experience.

1. *Track Lists***Violin**

Track Page

- | | | | |
|---|-----|--|------------------|
| 1 | 127 | Richard Wagner (1813–1883)
Overture to ‘Tannhäuser’
Slovak PO / Michael Halász | 2:06
8.550136 |
| 2 | 128 | Anonymous
Domna, pos vos ay chausida
Ensemble Unicorn / Oni Wytars / Michael Posch / Marco Ambrosini | 0:28
8.554257 |
| 3 | 128 | We don’t merely use instruments, we play on them. And they play on us. | 1:19 |
| 4 | 128 | Johannes Brahms (1833–1897) , tr. Joachim
Hungarian Dance No. 7 for Violin and Piano
Marat Bisengaliev / John Lenehan | 1:39
8.553026 |
| 5 | 128 | The violin is one of the most tender and beautiful instruments ever invented. | 0:45 |

The Instruments of the Orchestra

Track Page

- | | | | |
|----|-----|---|------------------|
| 6 | 129 | Johannes Brahms (1833–1897)
Violin Concerto in D major (Adagio)
Takako Nishizaki / Slovak PO / Stephen Gunzenhauser | 1:08
8.550195 |
| 7 | 129 | But for a long time it was seen as the instrument of the devil. | 0:17 |
| 8 | 129 | Igor Stravinsky (1882–1971)
The Soldier’s Tale (Triumphal March of the Devil)
Northern CO / Nicholas Ward | 0:45
8.553662 |
| 9 | 129 | The manipulative seductiveness of the gypsy violin | 0:43 |
| 10 | 129 | Anonymous
Csárdás Music
Ferenc Sánta and his Gypsy Band | 3:33
8.550954 |
| 11 | 129 | The violin and the imitation of nature | 0:23 |
| 12 | 130 | Antonio Vivaldi (1678–1741)
The Four Seasons (Spring, mvt 1)
Takako Nishizaki / Capella Istropolitana / Stephen Gunzenhauser | 0:35
8.550056 |
| 13 | 130 | Birds are again evoked in the second concerto, especially music’s natural favourite. | 0:09 |
| 14 | 130 | Antonio Vivaldi
The Four Seasons (Summer, mvt 1)
Takako Nishizaki / Capella Istropolitana / Stephen Gunzenhauser | 0:41
8.550056 |
| 15 | 130 | Like the devil, the violin is a master of disguise. | 0:18 |
| 16 | 130 | Fritz Kreisler (1875–1962)
Old Viennese Dance No. 3 ‘Schön Rosmarin’
Takako Nishizaki / Jenő Jandó | 1:55
8.550306 |

Track Page

- | | | | |
|----|-----|--|------------------------------|
| 17 | 130 | The menacing sensuality of Ravel's <i>Tzigane</i> ; a very different side of the violin: | 0:15 |
| 18 | 130 | Maurice Ravel (1875–1937)
Tzigane
Marat Bisengaliev | 0:51
8.550494 |
| 19 | 130 | Do we now have the true measure of this instrument? Not just yet. | 0:15 |
| 20 | 130 | Nicolò Paganini (1782–1840)
Caprice No. 24
Ilya Kaler | 0:48
8.550717 |
| 21 | 130 | The many effects of the string tremolando
Johann Sebastian Bach (1685–1750)
Brandenburg Concerto No. 4 (last mvt)
Corinne Chapelle / Christine Pichlmeier / Robert Hill
Cologne CO / Helmut Müller-Brühl
From joy to fright
Franz Schubert (1797–1828)
Quartettsatz in C minor
Kodály Quartet
The string tremolo practically spells the word <i>agitato</i> . | 8.554608
8.505021
1:57 |
| 22 | 131 | Benjamin Britten (1913–1976)
Variations on a Theme of Frank Bridge (No. 7)
Bournemouth Sinfonietta / Richard Studt | 1:06
8.550823 |
| 23 | 131 | Prokofiev's tremolo in <i>Romeo and Juliet</i> should not be heard just before bedtime. | 0:22 |

The Instruments of the Orchestra

Track Page

24	131	Sergey Prokofiev (1891–1953) Romeo and Juliet (Act IV) NSO of Ukraine / Andrew Mogrelia	0:46 8.553184–85
25	131	Vivaldi uses it to illustrate the shivering of travellers crossing the ice.	0:14
26	131	Antonio Vivaldi (1678–1741) The Four Seasons (Winter, mvt 1) Takako Nishizaki / Capella Istropolitana / Stephen Gunzenhauser	0:57 8.550056
27	131	The violin muted	0:31
28	132	Claude Debussy (1862–1918) , tr. A Roelens Suite bergamasque (Clair de lune) Takako Nishizaki / Jenő Jandó	1:41 8.550306
29	132	The gentleness of muted strings persists even when a whole orchestra plays.	0:30
30	132	Wolfgang Amadeus Mozart (1756–1791) Piano Concerto No. 21 in C major, K. 467 (slow mvt) Jenő Jandó / Concentus Hungaricus / András Ligeti	1:26 8.550202
31	132	The pizzicato violin	0:38
32	132	Johann Strauss (1825–1899) Pizzicato Polka CSR State Philharmonic Orchestra / Alfred Walter	2:29 8.550340
33	132	In Prokofiev's Second Violin Concerto, the accompaniment is pizzicato.	0:26
34	132	Sergey Prokofiev Violin Concerto No. 2 in G minor (slow mvt) Tedi Papavrami / Polish NRSO / Antoni Wit	2:02 8.553494

Track Page

- 35 133 Varieties of pizzicato:
Dmitry Borisovich Kabalevsky (1904–1987)
 Colas Breugnon (The People's Feast)
 Moscow SO / Vasili Jelvakov 8.553411
 Now a drier, leaner, hungrier pizzicato. There's not a lot of comfort here.
- Peter Warlock (1894–1930)**
 Capriol Suite (Tordion)
 Bournemouth Sinfonietta / Richard Studt 8.550823
 The use of pizzicato as 'percussion'
- Sergey Prokofiev**
 Romeo and Juliet (Act I)
 NSO of Ukraine / Andrew Mogrelia 8.553184–85
 Mahler used pizzicato as percussion in his lyrical Fourth Symphony.
- Gustav Mahler (1860–1911)**
 Symphony No. 4 (mvt 2)
 Polish NRSO / Antoni Wit 8.550527
 Another form of violin 'percussion': playing with the wood of the bow 3:09
- 36 133 **Gustav Holst (1874–1934)**
 The Planets (Mars – the bringer of War) 1:27
 Slovak RSO / Adrian Leaper 8.550193
- 37 134 The technique of double-stopping enables the violin to play duets with itself.
- Johann Sebastian Bach (1685–1750)**
 Sonata No. 3 in C major for unaccompanied violin (Fugue)
 Lucy van Dael 8.554423
 Now a later example of the same technique 2:09

The Instruments of the Orchestra

Track Page

- | | | | |
|------|-----|---|------------------|
| [38] | 134 | Johannes Brahms (1833–1897) , tr. Joachim
Hungarian Dance No. 4 for Violin and Piano
Marat Bisengaliev / John Lenehan | 3:51
8.553026 |
| [39] | 134 | Double-stopping is a standard feature of a lot of folk music. | 0:14 |
| [40] | 134 | Antonio Vivaldi (1678–1741)
The Four Seasons (Autumn, mvt 1)
Takako Nishizaki / Capella Istropolitana / Stephen Gunzenhauser | 0:37
8.550056 |
| [41] | 134 | Now the same technique, but the sound might have come from another world. | 0:30 |
| [42] | 135 | Maurice Ravel (1875–1937)
Boléro
Royal PO / Adrian Leaper | 0:49
8.550501 |
| [43] | 135 | Double-stopping can only approximate the sound of a real violin duet. | 0:20 |
| [44] | 135 | Joseph Joachim (1831–1907)
Cadenza to the Violin Concerto by Brahms
Takako Nishizaki | 0:44
8.550195 |
| [45] | 135 | Now compare that with a real violin duet. | 0:12 |
| [46] | 135 | Béla Bartók (1881–1945)
Forty-four Duos (No. 1: Teasing Song)
György Pauk / Kazuki Sawa | 0:52
8.550868 |
| [47] | 135 | Another duo by Bartók, demonstrating the violin's rich lower register | 0:10 |
| [48] | 135 | Béla Bartók
Forty-four Duos (No. 2: Maypole Dance)
György Pauk / Kazuki Sawa | 0:40
8.550868 |
| [49] | 135 | And now what may be the most beautiful accompanied violin duet in history | 0:17 |

Track Page

- | | | | |
|----|-----|--|---------------------|
| 50 | 135 | Johann Sebastian Bach (1685–1750)
Concerto in D minor for two violins (Largo)
Takako Nishizaki / Alexander Jablovok / Capella Istropolitana / Oliver Dohnányi | 6:43
8.550194 |
| 51 | 135 | The soul of the violin is in song; but what about this weird passage? | 0:42 |
| 52 | 136 | Sergey Prokofiev (1891–1953)
Violin Concerto No. 1 in D major (mvt 2)
Tedi Papavrami / Polish NRSO / Antoni Wit | 0:34
8.553494 |
| 53 | 136 | The use of harmonics in the orchestra can be both magical and unsettling. | 0:29 |
| 54 | 136 | Gustav Mahler (1860–1911)
Symphony No. 1 ‘Titan’ (mvt 1, opening)
Polish NRSO / Michael Halász | 1:33
8.550522 |
| 55 | 136 | Tchaikovsky’s use of harmonics in <i>The Sleeping Beauty</i> is both strange and daring. | 0:11 |
| 56 | 136 | Pyotr Il’yich Tchaikovsky (1840–1893)
The Sleeping Beauty (Act II, No. 15: Entr’acte)
CSSR State Philharmonic / Andrew Mogrelia | 0:33
8.550490–92 |
| 57 | 136 | Ravel’s harmonics in <i>Mother Goose</i> effect a magical transformation. | 0:29 |
| 58 | 136 | Maurice Ravel (1875–1937)
Ma Mère l’oye – Mother Goose (Beauty and the Beast)
Slovak RSO / Kenneth Jean | 0:36
8.554463 |

The Instruments of the Orchestra

Track Page

- 59 136 Stravinsky's harmonics in *The Firebird* transport us almost into another world. 0:46
Igor Stravinsky (1882–1971)
The Firebird (Introduction) 0:32
BRT Philharmonic, Brussels / Alexander Rahbari 8.554060
- 60 137 The natural upper notes of the violins have a unique emotional 'grab'. 0:32
- 61 137 **Richard Strauss (1864–1949)**
Also sprach Zarathustra (Of the Afterworldsmen) 0:55
Slovak PO / Zdeněk Košler 8.550182
- 62 137 Still in their upper register, the violins unleash the energy of a young colt. 0:32
- 63 137 **Benjamin Britten (1913–1976)**
Variations on a Theme of Frank Bridge (No. 4) 1:10
Bournemouth Sinfonietta / Richard Studt 8.550823
- 64 137 Elsewhere, Britten uses the same high register to create a very different mood. 0:11
- 65 137 **Benjamin Britten**
Four Sea Interludes (Dawn) from 'Peter Grimes' 1:08
New Zealand SO / Myer Fredman 8.553107
- 66 137 To end this outing with the violins, a charming little elfin dance 0:12
- 67 137 **Joseph Pepi Hellmesberger (1855–1907)**
Elfenreigen 1:29
Göttinger Sinfonie Orchestra / Christian Simonis 8.225021

Lower Strings

Track Page

- | | | | |
|----|-----|---|----------------------|
| 68 | 138 | Introduction to the viola | 0:42 |
| 69 | 138 | Georg Philipp Telemann (1681–1767)
Viola Concerto (mvt 1)
Ladislav Kyselak / Capella Istropolitana / Richard Edlinger | 2:46
8.550156 |
| 70 | 138 | Khatchaturian gets a very different sound from it: fuller, fruitier, more exotic. | 0:14 |
| 71 | 138 | Aram Il'yich Khatchaturian (1903–1978)
Gayane Suite No. 1 (Armen's Solo)
St Petersburg State SO / André Anichanov | 1:15
8.550800 |
| 72 | 138 | Very nearly the whole of the violin's upper register is also available to the viola. | 0:39 |
| 73 | 138 | Benjamin Britten
Passacaglia, Op. 33b from 'Peter Grimes'
New Zealand SO / Myer Fredman | 1:00
8.553107 |
| 74 | 139 | The viola can bring a special, rich twanginess to pizzicato that the violins lack.

Richard Strauss
Don Quixote
Lars Anders Tomter / SO of Ireland / Gerhard Markson |

8.554175 |
| | | Berlioz drew sounds from it that retain their metallic strangeness even today. | 1:03 |
| 75 | 139 | Hector Berlioz (1803–1869)
Harold in Italy (mvt 4)
Rivka Golani / San Diego SO / Yoav Talmi | 2:00
8.553034 |
| 76 | 139 | The muted viola: intimate, gentle, poignant in Dvořák | 0:34 |

The Instruments of the Orchestra

Track Page

77	139	Antonín Dvořák (1841–1904) Cypresses (No. 9) Vlach Quartet, Prague	3:00 8.553375
78	139	The massed violas of the modern symphony orchestra in Mahler	0:40
79	140	Gustav Mahler (1860–1911) Symphony No. 4 (mvt 3) Polish NRSO / Antoni Wit	1:13 8.550527
80	140	The ‘period’ viola in Bach	1:05
81	140	Johann Sebastian Bach (1685–1750) Brandenburg Concerto No. 6 (last mvt) Makoto Sudo / Marco Genero / Susanne Braumann / Liam Fenelli / Gerhard Anders Harald Hoeren / Cologne CO / Helmut Müller-Brühl	5:18 8.554607
82	140	The cello: a voice of unique nobility	0:28
83	140	Johann Sebastian Bach Suite No. 1 for unaccompanied cello (Prelude) Csaba Onczay	2:30 8.550677
84	141	Brahms and the ‘soul’ of the cello	0:19
85	141	Johannes Brahms (1833–1897) Piano Concerto No. 2 in B flat major (mvt 3) Idil Biret / Polish NRSO (Katowice) / Antoni Wit	1:04 8.554089
86	141	Most orchestral composers tend to emphasise the cello’s lower register.	0:27

Track Page

- | | | | |
|----|-----|---|------------------|
| 87 | 141 | Johann Sebastian Bach
Cantata 'Herz und Mund und Tat und Leben', BWV 147
(Soprano Aria: Schame dich, o Seele, nicht)
Ingrid Kertesi / Failoni CO (Budapest) / Mtys Antl | 3:03
8.550642 |
| 88 | 141 | In the time of Beethoven the cello remained as fundamental as ever. | 0:14 |
| 89 | 141 | Ludwig van Beethoven (1770–1827)
Symphony No. 3 'Eroica' (finale)
Nicolaus Esterhzy Sinfonia / Bla Drahos | 0:46
8.553475 |
| 90 | 141 | But the cello is not condemned to spend its life in the basement. | 0:33 |
| 91 | 141 | David Popper (1843–1913)
Elfentanz, Op. 39
Hai-Ye Ni / Hlne Jeanney | 2:55
8.554356 |
| 92 | 142 | Not only in recital showpieces like that is the cello is used in its highest register. | 0:10 |
| 93 | 142 | John Tavener (b. 1944)
The Protecting Veil (opening)
Maria Kliegel / Ulster Orchestra / Takuo Yuasa | 2:54
8.554388 |
| 94 | 142 | A cello with an identity-crisis: the pizzicato Flamencan | 0:15 |
| 95 | 142 | Rogelio Huguety Tagell (1882–1956)
Flamenco
Maria Kliegel | 2:48
8.550785 |
| 96 | 142 | Double-stopping in the lower reaches of the cello's range | 0:31 |

The Instruments of the Orchestra

Track Page

- | | | | |
|-----|-----|---|------------------|
| 97 | 142 | Gaspar Cassadó (1897–1966)
Solo Suite for Cello (Sardana)
Maria Kliegel | 1:08
8.550785 |
| 98 | 142 | It's in its middle register that the cello really comes into its own. | 0:21 |
| 99 | 142 | Sergey Rachmaninov (1873–1943)
Oriental Dance, Op. 2 No. 2
Maria Kliegel / Bernd Glemser | 1:32
8.550785 |
| 100 | 142 | It was to the cellos that Beethoven gave two of his most famous themes.
Ludwig van Beethoven (1770–1827)
Symphony No. 5 (mvt 2)
Nicolaus Esterházy Sinfonia / Béla Drahos | 8.553476 |
| | | Still more famous than that theme is this one from the Ninth Symphony. | 0:54 |
| 101 | 143 | Ludwig van Beethoven
Symphony No. 9 (finale)
Nicolaus Esterházy Sinfonia / Béla Drahos | 0:54
8.553478 |
| 102 | 143 | Introduction to the double-bass | 0:43 |
| 103 | 143 | Camille Saint-Saëns (1835–1921)
The Carnival of the Animals (The Elephant)
Slovak RSO / Ondrej Lenárd | 1:32
8.550335 |
| 104 | 143 | But the double-bass can be intensely expressive and graceful. | 0:10 |

Track Page

- 105 143 **Giovanni Bottesini (1821–1889)**
Elegy No. 1 in D major 2:37
Joel Quarrington / Andrew Burashko 8.554002
- 106 143 The range of the double-bass is the greatest of all the string instruments
Giovanni Bottesini
Allegro di concerto, ‘Alla Mendelssohn’
Joel Quarrington / Andrew Burashko 8.554002
And it’s also capable of very considerable virtuosity. 0:47
- 107 144 **Giovanni Bottesini**
Capriccio di bravura 4:42
Joel Quarrington / Andrew Burashko 8.554002
- 108 144 Double-bass solos in orchestral scores are rare but often memorable.
Gustav Mahler (1860–1911)
Symphony No. 1 ‘Titan’ (mvt 3)
Polish NRSO / Michael Halász 8.55052
In his Third Symphony Mahler makes a very different use of the instrument.
Gustav Mahler
Symphony No. 3 (mvt 1) 1:33
Polish NRSO / Antoni Wit 8.550525–26

- 109 144 **The double-bass muted in Prokofiev**
Sergey Prokofiev (1891–1953)
Lieutenant Kijé Suite (Kijé’s Wedding)
Slovak State Philharmonic / Andrew Mogrelia 8.550381
In another work Prokofiev uses the double-bass to enhance the winds.
- Sergey Prokofiev**
Romeo and Juliet (Act III)
NSO of Ukraine / Andrew Mogrelia 8.553184–85
And he combines the bass clarinet with a shivering tremolo from the double-basses.
- Sergey Prokofiev**
Romeo and Juliet (Act III)
NSO of Ukraine / Andrew Mogrelia 8.553184–85
Well, if that music frightens us, this frightens the double-bass players: 2:25
- 110 145 **Ludwig van Beethoven (1770–1827)**
Symphony No. 5 (mvt 3)
Nicolaus Esterházy Sinfonia / Béla Drahos 8.553476
So much for the strings; on now to the winds 1:20

Woodwind

Track Page

[111]	145	The antiquity and magic of the flute	0:20
[112]	145	Claude Debussy (1862–1918) Prélude à l'après-midi d'un faune BRT Philharmonic, Brussels / Alexander Rahbari	3:19 8.550262
[113]	145	The versatility and agility of the flute	0:21
[114]	145	Johann Sebastian Bach (1685–1750) Orchestral Suite No. 2 in B minor (Badinerie) Capella Istropolitana / Jaroslav Dvořák	1:18 8.550244
[115]	146	The flute in fifteenth-century Spain	0:24
[116]	146	Anonymous Sa'dâwi Ensemble Accentus / Thomas Wimmer	0:55 8.553617
[117]	146	Other flutes: the bass and alto	0:29
[118]	146	Aulis Sallinen (b. 1935) Chamber Music No. II Hanna Juutilainen / Finnish CO / Okko Kamu	1:12 8.553747
[119]	146	The piccolo – aptly named	0:19
[120]	146	Jean-Philippe Rameau (1683–1764) La Naissance d'Osiris (mvt 6) Capella Savaria / Mary Térey-Smith	0:47 8.553388
[121]	146	From a piccolo of the eighteenth century to one of its descendants in the twentieth	0:09

The Instruments of the Orchestra

Track Page

122	146	Igor Stravinsky (1882–1971) Suite No. 1 for Small Orchestra (Valse) BRT Philharmonic, Brussels / Alexander Rahbari	0:54 8.550263
123	147	A variety of techniques	0:19
124	147	Aulis Sallinen (b. 1935) Chamber Music No. II Hanna Juutilainen / Finnish CO / Okko Kamu	0:31 8.553747
125	147	Flutter-tonguing. But Tchaikovsky got there eighty years before.	0:28
126	147	Pyotr Il'yich Tchaikovsky (1840–1893) The Nutcracker (Act II, No. 2: Scène) Slovak RSO / Ondrej Lenárd	0:44 8.550324–25
127	147	From the transverse to the vertical: the Baroque recorder	0:40
128	147	Georg Philipp Telemann (1681–1767) Recorder Suite in A minor (Menuet II) Capella Istropolitana / Richard Edlinger	2:12 8.550156
129	148	An unfamiliar, early vision of the instrument	0:23
130	148	Josquin Baston (fl. 1542–53) Naelden, Naelden Convivium Musicum Gothenburgense / Sven Berger / Andreas Edlund	1:09 8.554425
131	148	The Bachian oboe	0:35
132	148	Johann Sebastian Bach (1685–1750) Cantata 'Ein feste Burg ist unser Gott', BWV 80 (No. 7: Duetto) Judít Németh / József Mukk / Hungarian Radio Chorus Failoni CO (Budapest) / Mátyás Antál	3:34 8.550642

Track	Page		
133	148	Introduction to the cor anglais or 'English horn'	0:41
134	148	Antonín Dvořák (1841–1904) Symphony No. 9 'From the New World' (mvt 2) Slovak PO / Stephen Gunzenhauser	1:24 8.550271
135	149	The loneliness of the cor anglais	0:11
136	149	Jean Sibelius (1865–1957) The Swan of Tuonela Iceland SO / Petri Sakari	1:49 8.554265
137	149	The cor anglais joins the French horn in Haydn.	0:17
138	149	Franz Joseph Haydn (1732–1809) Symphony No. 22 'The Philosopher' (opening) Northern CO / Nicholas Ward	1:43 8.550724
139	149	Introduction to the oboe d'amore, beloved of Bach – but also of Ravel	0:22
140	149	Maurice Ravel (1875–1937) Boléro Royal PO / Adrian Leaper	0:50 8.550501
141	149	The clarinet family: boxing the compass, from the depths of the bass clarinet... Bernard Herrmann (1911–1975) The Egyptian (Violence) Moscow Symphony Orchestra and Choir / William T. Stromberg ...to the raucous and squealy...	8.225078

Track Page

Leoš Janáček (1854–1928)

Taras Bulba (The Death of Ostap)

Slovak RSO / Ondrej Lenárd

8.550411

...to the shrill and complaining...

0:37

149 Igor Stravinsky (1882–1971)

Petrushka (No. 8: Peasant with Bear)

BRT Philharmonic, Brussels / Alexander Rahbari

8.550263

...to the high spirits of a playful puppy.

Hector Berlioz (1803–1869)

Symphonie fantastique (last mvt)

Slovak RSO / Pinchas Steinberg

8.550093

And to the downright jazzy:

Sergey Prokofiev (1891–1953)

Romeo and Juliet (Act II)

NSO of Ukraine / Andrew Mogrelia

1:38

8.553184–85

143 150 As the high clarinets tend to be loud, so the bass tends to be soft:

0:18

144 150 Aram Il'yich Khachaturian (1903–1978)

Gayane Suite No. 1 (mvt 5)

St Petersburg State SO / André Anichanov

0:54

8.550800

145 150 The bass clarinet is used by most composers mainly as a colouring agent...

Igor Stravinsky

Petrushka (No. 4: The Blackamoor)

BRT Philharmonic, Brussels / Alexander Rahbari

8.550263

...but it does occasionally get a whole tune to itself.

Track Page

	Isaac Albéniz (1860–1909) , arr. Breiner	
	Iberia (Almeria)	1:44
	Moscow SO / Igor Golovschin	8.553023
[146]	150 The range of the normal clarinet parts goes quite high...	0:14
[147]	150 Pyotr Il'yich Tchaikovsky (1840–1893)	
	The Snow Maiden (Scene 5: Melodrama)	1:17
	Moscow SO / Igor Golovchin	8.553856
[148]	150 ...and quite low.	0:05
[149]	151 Sergey Prokofiev	
	Peter and the Wolf (The Cat)	0:45
	Slovak RSO / Ondrej Lenárd	8.550335
[150]	151 The clarinet as concerto soloist	0:19
[151]	151 Wolfgang Amadeus Mozart (1756–1791)	
	Clarinet Concerto in A major (Rondo)	2:48
	Ernst Ottensamer / Vienna Mozart Academy / Johannes Wildner	8.550345
[152]	151 But that's not the instrument Mozart wrote it for; this is:	0:16
[153]	151 Wolfgang Amadeus Mozart	
	Clarinet Concerto in A major (Rondo)	2:47
	Thea King / English Chamber Orchestra / Jeffery Tate	Hyperion CDA66199
[154]	151 Introduction to the saxophone	1:06
[155]	151 Zoltán Kodály (1882–1967)	
	Háry János Suite (mvt 4)	1:03
	Hungarian State Orchestra / Mátyás Antál	8.550142

The Instruments of the Orchestra

Track Page

156	151	The soprano saxophone has quite a different feel to it.	0:09
157	152	Georges Bizet (1838–1875) L'Arlésienne Suite No. 1 (Minuet) Slovak PO / Anthony Bramall	1:17 8.550061
158	152	The little soprano sax goes even higher.	0:12
159	152	Maurice Ravel (1875–1937) Boléro Royal PO / Adrian Leaper	0:53 8.550501
160	152	The most famous use of the saxophone is in an orchestration by Ravel.	0:16
161	152	Modest Petrovich Mussorgsky (1839–1881) , orch. Ravel Pictures at an Exhibition (The Old Castle) Slovak PO / Daniel Nazareth	0:55 8.550051
162	152	The saxophone can be quite contagiously good-humoured.	0:11
163	152	Rudy Wiedoeft (1893–1940) Sax-o-phun Rudy Wiedoeft Courtesy of Malcolm McMillan and Clarinet Classics	0:22 CC0018
164	152	The puffa-puffa image of the bassoon	0:25
165	152	Sergey Prokofiev (1891–1953) Peter and the Wolf (Grandfather) Slovak RSO / Ondrej Lenárd	0:46 8.550335
166	152	The Bachian bassoon, in accompanimental mode	0:20

Track Page

- | | | |
|-----|---|------------------|
| 167 | 153 Johann Sebastian Bach (1685–1750)
Cantata ‘Weichet nur, betrübte Schatten’ (‘Wedding Cantata’),
BWV 202 (Aria No. 1)
Friederike Wagner / Capella Istropolitana / Christian Brembeck | 1:19
8.550431 |
| 168 | 153 Bizet leaves the puffa-puffa image out, allowing the bassoon to sing.
Georges Bizet
Carmen Suite No. 1 (Les Dragons d’Alcala)
Slovak PO / Anthony Bramall | 0:56
8.550061 |
| 169 | 153 And Ravel, also in Spanish mode, does likewise. | 0:16 |
| 170 | 153 Maurice Ravel
Boléro
Royal PO / Adrian Leaper | 0:59
8.550501 |
| 171 | 153 The bassoon as a voice of high seriousness, indeed desolate loneliness | 0:15 |
| 172 | 153 Sir Arnold Bax (1883–1953)
Symphony No. 3 (opening)
Royal Scottish NO / David Lloyd-Jones | 1:03
8.553608 |
| 173 | 153 The eerie bassoon in its highest register | 0:15 |
| 174 | 153 Igor Stravinsky (1882–1971)
The Rite of Spring (opening)
BRT Philharmonic, Brussels / Alexander Rahbari | 0:58
8.550472 |
| 175 | 154 Stravinsky now draws on its lowest register, lonely and melancholy. | 0:21 |
| 176 | 154 Igor Stravinsky
The Firebird Suite (1919, Berceuse)
BRT Philharmonic, Brussels / Alexander Rahbari | 1:01
8.550263 |

The Instruments of the Orchestra

Track Page

[177]	154	The bassoon as concerto soloist, avoiding all exaggeration	0:14
[178]	154	Johann Melchior Molter (1696–1765) Bassoon Concerto in G minor (finale) Albrecht Holder / Stuttgart PO / Nicolás Pasquet	2:02 8.553456
[179]	154	The deep-voiced contra-bassoon, as a fairy-tale beast	0:28
[180]	154	Maurice Ravel (1875–1937) Ma Mère l’oye – Mother Goose (Beauty and the Beast) Slovak RSO / Kenneth Jean	1:30 8.554463
[181]	154	The French horn under its woodwind hat	0:25
[182]	154	Carl Nielsen (1865–1931) Wind Quintet, Op. 43 (last mvnt) Oslo Wind Ensemble	1:42 8.553050
[183]	155	Now a more prominent role, in a woodwind quintet from an earlier era	0:12
[184]	155	Antonín Reicha (1770–1836) Wind Quintet in A Minor, Op. 100 No. 5 (mvnt 2) Michael Thompson Wind Quintet	1:32 8.550432
[185]	155	The horn in harmonious blend with strings in another quintet	0:16
[186]	155	Wolfgang Amadeus Mozart (1756–1791) Horn Quintet, K. 407 (finale) Jenő Keveházi / Kodály Quartet	3:55 8.550437

Brass

Track Page

187	155	The trumpet as virtuoso soloist	1:02
188	156	Johann Sebastian Bach (1685–1750) Brandenburg Concerto No. 2 (last mvt) Jürgen Schuster / Nadja Schubert / Christian Hommel / Winfried Rademacher Cologne CO / Helmut Müller-Brühl	2:37 8.554607
189	156	The special brilliance of paired trumpets	0:19
190	156	Antonio Vivaldi (1678–1741) Concerto in C for two trumpets, RV537 (mvt 1) Niklas Eklund & Jeffrey Segal / Wasa Baroque Ensemble / Edward H. Tarr	2:54 8.555099
191	156	The ceremonial trumpet	0:36
192	156	Aaron Copland (1900–1990) Fanfare for the Common Man Slovak RSO / Stephen Gunzenhauser	1:25 8.550282
193	156	Trumpets and drums – an incomparable alliance	0:34
194	156	George Frideric Handel (1685–1759) Messiah (The Trumpet Shall Sound) The Scholars Baroque Ensemble	4:10 8.550667–68
195	157	The versatility of the trumpet, from the most public to the most lonely	0:38
196	157	George Gershwin (1898–1937) Piano Concerto in F (slow mvt) Kathryn Selby / CSR Symphony Orchestra (Bratislava) / Richard Hayman	1:14 8.550295

The Instruments of the Orchestra

Track Page

- | | | | |
|-----|-----|---|------------------|
| 197 | 157 | The trumpet as the voice of the city
George Gershwin (1898–1937)
An American in Paris
Slovak PO / Richard Hayman | 8.550295 |
| | | The trumpet as recruitment officer | |
| | | Igor Stravinsky (1882–1971)
The Soldier’s Tale (The March)
Northern CO / Nicholas Ward | 8.553662 |
| | | The trumpet as swaggerer | 2:05 |
| 198 | 157 | Georges Bizet (1838–1875)
Carmen Suite No. 2 (Habanera)
Slovak PO / Anthony Bramall | 0:55
8.550061 |
| 199 | 158 | The trumpet as the voice of strength and courage | 0:13 |
| 200 | 158 | Georges Bizet
Carmen Suite No. 2 (Toreador’s Song)
Slovak PO / Anthony Bramall | 2:20
8.550061 |
| 201 | 158 | The trumpet muted
Igor Stravinsky
Petrouchka (No. 4: The Blackamoor)
BRT Philharmonic, Brussels / Alexander Rahbari | 8.550263 |

Track Page

	Sergey Prokofiev (1891–1953)	
	Lieutenant Kijé Suite (opening)	
	Slovak State Philharmonic / Andrew Mogrelia	8.550381
	The trumpet as the voice of weariness	1:14
202	158 Aaron Copland (1900–1990)	
	Billy the Kid	1:16
	Slovak RSO / Stephen Gunzenhauser	8.550282
203	158 The trumpet as character actor	0:31
204	158 Modest Petrovich Mussorgsky (1839–1881) , orch. Ravel	
	Pictures at an Exhibition (No. 6)	2:25
	Slovak PO / Daniel Nazareth	8.550051
205	159 The trumpet as the voice of God	0:15
206	159 Johann Sebastian Bach (1685–1750)	
	Mass in B minor ('Et exspecto')	4:35
	Slovak Philharmonic Choir / Capella Istitopolitana / Christian Brembeck	8.550585–86
207	159 The birth of the trombone	0:38
208	159 Anonymous	
	Aenmerckt nu hier	1:36
	Convivium Musicum Gothenburgense / Sven Berger / Andreas Edlund	8.554425
209	159 The birth of the brass as a family	1:24

The Instruments of the Orchestra

Track Page

210	160	Giovanni Gabrieli (c.1553/6–1612) Canzon 12 in double echo London SO / Eric Crees	3:18 8.553609
211	160	The trombone in the eighteenth century	0:36
212	160	Johann Georg Albrechtsberger (1736–1809) Trombone Concerto in B flat major (finale) Northern Sinfonia / Alain Trudel, trombone & director	3:06 8.553831
213	160	The tone of the tenor trombone Otto Höser (1897–1959) Romance for Trombone and Organ Alain Trudel / Patrick Wedd	8.553716
		The memorable voice of the bass trombone Hector Berlioz (1803–1869) Requiem (mvt 2) Elora Festival Orchestra / Noel Edison	8.554494–95
		But the bass trombone is more than an instrumental bullfrog.	2:18
214	161	Franz Liszt (1811–1886) Hosannah Alain Trudel / Patrick Wedd	1:20 8.553716
215	161	The trombones become part of the orchestra.	0:47
216	161	Ludwig van Beethoven (1770–1827) Symphony No. 5 (finale) Nicolaus Esterházy Sinfonia / Béla Drahos	2:46 8.553476

Track Page

217	161	The Wagnerian trombone Richard Wagner (1813–1883) Overture to ‘Tannhäuser’ Slovak PO / Michael Halász	1:04 8.550136
218	161	The trombone as caricaturist	0:13
219	161	Igor Stravinsky (1882–1971) Pulcinella (No. 19: Vivo) Bournemouth Sinfonietta / Stefan Sanderling	1:37 8.553181
220	161	The trombone as raspberry Béla Bartók (1881–1945) Concerto for Orchestra (Intermezzo) BRT Philharmonic, Brussels / Alexander Rahbari	1:46 8.550261
221	162	The horn and the hunt	0:40
222	162	Wolfgang Amadeus Mozart (1756–1791) Horn Concerto No. 4 in E flat, K. 495 (finale) Michael Thompson / Bournemouth Sinfonietta	3:39 8.553592
223	162	The challenging horn of the Baroque	0:42
224	163	Jean-Philippe Rameau (1683–1764) Abaris ou les Boréades (Menuet) Capella Savaria / Mary Térey-Smith	1:20 8.553388
225	163	The scarcity of first-rate players in Handel’s time	0:24

The Instruments of the Orchestra

Track Page

- | | | |
|------------|--|---------------------|
| 226 | 163 George Frideric Handel (1685–1759)
Water Music (Minuet 1)
Capella Istropolitana / Bohdan Warchal | 1:57
8.550109 |
| 227 | 163 The horn as magician
Igor Stravinsky (1882–1971)
The Firebird Suite (1919, finale)
BRT Philharmonic, Brussels / Alexander Rahbari | 0:59
8.550263 |
| 228 | 163 Horns and the sound of nobility | 0:12 |
| 229 | 163 Richard Wagner (1813–1883)
Overture to ‘Tannhäuser’ (opening)
Slovak PO / Michael Halász | 0:56
8.550136 |
| 230 | 163 The special sound of the horn in its higher register | 0:11 |
| 231 | 163 Johann Sebastian Bach (1685–1750)
Mass in B minor (‘Quoniam tu solus sanctus’)
Hartmut Elbert / Slovak Philharmonic Choir
Capella Istropolitana / Christian Brembeck | 4:15
8.550585–86 |
| 232 | 164 The trumpet-like sound of massed horns | 0:21 |
| 233 | 164 Gustav Mahler (1860–1911)
Symphony No. 3 (mvt 1, opening)
Polish NRSO / Antoni Wit | 0:38
8.550525–26 |
| 234 | 164 The tuba – unfairly maligned? | 0:49 |

Track Page

235	164	Sergey Prokofiev (1891–1953) Symphony No. 6 (mvt 3) NSO of Ukraine / Theodore Kuchar	1:07 8.553069
236	164	The tuba perfectly cast by Ravel	0:26
237	164	Modest Petrovich Mussorgsky (1839–1881) , orch. Ravel Pictures at an Exhibition (Bydlo) Slovak PO / Daniel Nazareth	3:00 8.550051

Percussion

Track Page

- | | | |
|-----|---|------------------|
| 238 | 165 Introduction. And we begin with a bang. | 1:02 |
| 239 | 165 Aaron Copland (1900–1990)
Fanfare for the Common Man
Slovak RSO / Stephen Gunzenhauser

The bass drum on the battlefields | 8.550282 |
| | Ludwig van Beethoven (1770–1827)
Wellington’s Victory, Op. 91 (opening)
Slovak RSO / Ondrej Lenárd | 1:03
8.550230 |
| 240 | 165 At the opposite extreme is the triangle. | 0:26 |
| 241 | 165 Franz Liszt (1811–1886)
Piano Concerto No. 1 in E flat (Scherzo)
Joseph Banowetz / Slovak RSO / Oliver Dohnányi | 1:21
8.550292 |
| 242 | 165 Categories of percussion: tuned and untuned. The side drum | 0:36 |
| 243 | 166 Gioachino Rossini (1792–1868)
Overture to ‘La gazza ladra’ – The Thieving Magpie (opening)
Zagreb Festival Orchestra / Michael Halász | 0:52
8.550236 |
| 244 | 166 The side drum in an effective but unexpected role

Carl Nielsen (1865–1931)
Clarinet Concerto (mvt 1)
Kevin Banks / Bournemouth SO / Kees Bakels | 1:08
8.554189 |
| 245 | 166 The tambourine. One of the oldest instruments in the world | 0:21 |

Track Page

- 246 166 **Anonymous**, arr. Susato
Den hoboeken dans 1:43
Convivium Musicum Gothenburgense / Sven Berger / Andreas Edlund 8.554425
- 247 166 Even older is the originally oriental gong. 0:28
- 248 166 **Maurice Ravel (1875–1937)**
Ma Mère l’oye – Mother Goose (Laideronette) 1:00
Slovak RSO / Kenneth Jean 8.554463
- 249 166 No single instrument can match the gong in evoking the breaking of waves.
Benjamin Britten (1913–1976)
Passacaglia, Op. 33b from ‘Peter Grimes’
New Zealand SO / Myer Fredman 8.553107
But gongs don’t have to be struck hard to be effective. 1:00
- 250 167 **Erik Satie (1866–1925)**, orch. Debussy
Gymnopédie No. 2 1:02
Gerald Garcia / CSFR State PO (Košice) / Peter Breiner 8.550480
- 251 167 The cymbals are generally discovered early in life.
Sir Edward Elgar (1857–1934)
The Sanguine Fan
English Northern Philharmonia / David Lloyd-Jones 8.553879
And they do more than clash together loudly. They can be clashed together softly.
Studio example
But they needn’t be clashed together at all.

Studio example

They can be lightly stroked by wire brushes.

Studio example

1:28

- 252 168 Other untuned percussion instruments include the whip.

Maurice Ravel (1875–1937)

Piano Concerto in G major (opening)

FranHois-Joël Thiollier / Polish NRSO / Antoni Wit

8.550753

And here are no fewer than twenty, cracked by Tchaikovsky:

Pyotr Il'yich Tchaikovsky (1840–1893)

The Nutcracker (Act I, Scene 5)

Slovak RSO / Ondrej Lenárd

1:05

8.550324–25

- 253 168 More versatile than the whip are the wood blocks...

Studio example

...which crop up all over the place in twentieth-century American music.

0:31

- 254 168 **Aaron Copland (1900–1990)**

Rodeo (Hoe-Down)

Slovak RSO / Stephen Gunzenhauser

0:44

8.550282

- 255 168 Related to the wood blocks, by sound, are the castanets.

Mikhail Ivanovich Glinka (1804–1857)

Jota aragonesa

Slovak RSO / Keith Clark

8.550086

But the castanets were also used by Monteverdi back in the seventeenth century. 1:09

Track Page

256	169 Claudio Monteverdi (1567–1643) Scherzi musicali (Damigella tutta belle) Concerto delle Dame di Ferrara / Sergio Vartolo	1:50 8.553317
257	169 A still earlier example from fifteenth-century Spain	0:30
258	169 Traditional Yo m'enamori d'un aire Carmen Cano / Ensemble Accentus / Thomas Wimmer	1:06 8.553617
259	169 The birth of the bongo	0:33
260	169 Leonard Bernstein (1918–1990) Symphonic Dances from 'West Side Story' Florida Philharmonic / James Judd	1:39 8.559099
261	169 From the streets of New York to the blacksmith's shop Giuseppe Verdi (1813–1901) Il trovatore ('Anvil Chorus') Budapest Festival Chorus / Hungarian State OO / Will Humberg	1:08 8.660023–24
262	170 Desert-island decibels Ferde Grofé (1892–1972) Grand Canyon Suite (On the Trail) Bournemouth SO / William T. Stromberg	8.559007
	Edgard Varèse (1883–1965) Arcana Polish NRSO / Christopher Lyndon-Gee	1:27 8.554820

The Instruments of the Orchestra

Track Page

- 263 170 From one vegetable to another: the humble squash, or marrow
José Pablo Moncayo (1912–1958)
Huapango 1:20
Festival Orchestra of Mexico / Enrique Bátiz 8.550838
- 264 171 Onwards to the tuned percussion. First, the timpani 0:14
- 265 171 **Richard Strauss (1864–1949)**
Also sprach Zarathustra (Introduction) 1:48
Slovak PO / Zdeněk Košler 8.550182
- 266 171 But the drum roll can be more effectively frightening than the big bang.
Gustav Mahler (1860–1911)
Symphony No. 2 ‘Resurrection’ (mvt 3) 0:29
Polish NRSO / Antoni Wit 8.550523–24
- 267 171 Not one drum roll, but many
Ferde Grofé (1892–1972)
Grand Canyon Suite (Sunrise)
Bournemouth SO / William T. Stromberg 8.559007
- Hector Berlioz (1803–1869)**
Symphonie fantastique (last mvt) 0:37
San Diego SO / Yoav Talmi 8.553597
- 268 171 Taking advantage of tunability 0:22
- 269 171 **Béla Bartók (1881–1945)**
Music for Strings, Percussion and Celeste (mvt 2) 2:25
BRT Philharmonic, Brussels / Alexander Rahbari 8.550261

Track Page

- 270 171 The Russian composer Rodion Shchedrin takes a downward turn.
Rodion Konstantinovich Shchedrin (b. 1932)
 Carmen Suite (Changing of the Guard)
 Ukrainian State SO / Theodore Kuchar 8.553038
 Tuned, yes; but for the truly melodic we must look elsewhere. 1:01
- 271 172 Introducing the glockenspiel
Rodion Konstantinovich Shchedrin
 Carmen Suite (Carmen's Entrance and Habanera) 1:15
 Ukrainian State SO / Theodore Kuchar 8.553038
- 272 172 Saint-Saëns and the xylophone 0:16
- 273 173 **Camille Saint-Saëns (1835–1921)**
 The Carnival of the Animals (Fossils) 1:18
 Slovak RSO / Ondrej Lenárd 8.550335
- 274 173 Ravel and the xylophone 0:11
- 275 173 **Maurice Ravel (1875–1937)**
 Ma Mère l'oye – Mother Goose (Laideronette) 2:37
 Slovak RSO / Kenneth Jean 8.554463
- 276 173 Introducing the marimba
Rodion Konstantinovich Shchedrin
 Carmen Suite (First Intermezzo) 0:38
 Ukrainian State SO / Theodore Kuchar 8.553038
- 277 173 Introducing the vibraphone 0:20

The Instruments of the Orchestra

Track Page

278	173 Max Steiner (1888–1971) The Treasure of the Sierra Madre (Narange dolce) Moscow SO / William T. Stromberg	1:25 8.225149
279	173 The vibraphone goes Russian... Rodion Konstantinovich Shchedrin (b. 1932) Carmen Suite (Carmen's Entrance and Habanera) Ukrainian State SO / Theodore Kuchar ...and is joined by the marimba. Rodion Konstantinovich Shchedrin Carmen Suite (Carmen's Entrance and Habanera) Ukrainian State SO / Theodore Kuchar	8.553038 0:57 8.553038
280	174 Introducing the Hungarian cimbalom	0:23
281	174 Traditional Folk Dances Ferenc Sánta and his Gypsy Band	3:00 8.550954
282	174 The cimbalom and the symphony orchestra	0:10
283	174 Zoltán Kodály (1882–1967) Háry János Suite (mvt 3) Hungarian State Orchestra / Mátyás Antál	1:30 8.550142
284	174 Introducing the tubular bells	0:17
285	174 Zoltán Kodály Háry János Suite (Viennese Musical Clock) Hungarian State Orchestra / Mátyás Antál	2:04 8.550142

Track	Page		
286	174	A more 'up-front' approach from Rodion Shchedrin	0:06
287	174	Rodion Konstantinovich Shchedrin Carmen Suite (Introduction) Ukrainian State SO / Theodore Kuchar	1:08 8.553038
288	174	But the bells can also make the sinister even more sinister. Ralph Vaughan Williams (1872–1958) Symphony No. 7 'Sinfonia antartica' (mvt 1) Bournemouth SO / Kees Bakels	0:38 8.550737
289	174	Introducing the celeste	0:14
290	174	Pyotr Il'yich Tchaikovsky (1840–1893) The Nutcracker (Dance of the Sugar Plum Fairy) Slovak RSO / Ondrej Lenárd	2:10 8.550324–25
291	175	Magic, in the use of collective percussion	0:19
292	175	Maurice Ravel (1875–1937) , arr. Grainger Miroirs (La Vallée des cloches) The Philharmonia / Geoffrey Simon	1.39 CALA Records CACD1004
293	175	Plucked instruments: the 'undercover percussion' Rodion Konstantinovich Shchedrin Carmen Suite (Scène) Ukrainian State SO / Theodore Kuchar	1:25 8.553038

- 294 175 A prime case in point is the harp, irresistible to the Romantics.
Pyotr Il'yich Tchaikovsky (1840–1893)
 The Nutcracker (Act II, No. 1: Scène)
 Slovak RSO / Ondrej Lenárd 8.550324–25
 The non-solo harp as an integral part of the orchestra
- Franz Liszt (1811–1886)**
 Hungarian Rhapsody No. 1 1:16
 Hungarian State Orchestra / Mátyás Antál 8.550142
- 295 176 The traditionally subservient role of the harpsichord in the Baroque orchestra 0:48
- 296 176 **Johann Sebastian Bach (1685–1750)**
 Brandenburg Concerto No. 2 (slow mvnt) 3:11
 Jürgen Schuster / Nadja Schubert / Christian Hommel / Winfried Rademacher
 Cologne CO / Helmut Müller-Brühl 8.554607
- 297 176 The piano: king of the tuned percussion
Camille Saint-Saëns (1835–1921)
 Symphony No. 3 ‘Organ’ (mvt 3)
 Slovak RSO / Stephen Gunzenhauser 8.550138
 And a quarter of a century after that: 1:28
- 298 176 **Igor Stravinsky (1882–1971)**
 Petrushka (Russian Dance) 4:28
 BRT Philharmonic, Brussels / Alexander Rahbari 8.550263

Track Page

299	177	The anti-Romantic piano as an integral part of the orchestra	0:23
300	177	Béla Bartók (1881–1945) Music for Strings, Percussion and Celeste (last mvt) BRT Philharmonic, Brussels / Alexander Rahbari	5:06 8.550261

Interlopers

Track Page

301	177	Keyboard instruments in the orchestra – the most powerful of them all:	0:18
302	177	Camille Saint-Saëns (1835–1921) Symphony No. 3 ‘Organ’ (finale) Imrich Szabo / Slovak RSO / Stephen Gunzenhauser	1:49 8.550138
303	177	But things in Handel’s day were very different.	0:15
304	177	George Frideric Handel (1685–1759) Organ Concerto in B flat, Op. 4 No. 3 (last mvnt) Simon Lindley / Northern Sinfonia / Bradley Creswick	3:44 8.553835
305	177	The organ is difficult to classify.	0:24
306	177	An unexpected, organ-related guest	0:14
307	178	Joseph Bodin de Boismortier (1689–1755) Concerto pour Zampogna (last mvnt) Le Concert Spirituel / Hervé Niquet	1:59 8.554456
308	178	Peasant-fancying... and a touch of the roaming cowboy	0:40
309	178	Claude-Michel Schoenberg (b. 1944) Les Misérables (Drink with Me) Richard Hayman and his Orchestra	1:02 8.990041
310	178	Outside artefacts and the power of association Wolfgang Amadeus Mozart (1756–1791) German Dance, K. 603 No. 3	1:16

Track Page

- Capella Istropolitana / Johannes Wildner 8.550412
- 311 178 Mahler's sleighbells
Gustav Mahler (1860–1911)
 Symphony No. 4 (opening) 0:47
 Polish NRSO / Antoni Wit 8.550527
- 312 179 In another symphony Mahler used cowbells.
Gustav Mahler
 Symphony No. 6 'Tragic' (mvt 1) 0:53
 Polish NRSO / Antoni Wit 8.550529–30
- 313 179 A roll-call of some unusual guests
Leroy Anderson (1908–1975)
 The Typewriter
 Richard Hayman and his Orchestra 8.559125
Erik Satie (1866–1925)
 Parade 2:46
 Orchestre Symphonique et Lyrique de Nancy / Jérôme Kaltenbach 8.554279
- 314 179 Chains, and more
Edgard Varèse (1883–1965)
 Intégrales
 Polish NRSO / Christopher Lyndon-Gee 8.554820
George Gershwin (1898–1937)
 An American in Paris

Track Page

- Slovak PO / Richard Hayman 8.550295
- Leroy Anderson (1908–1975)**
 Sandpaper Ballet 2:35
 Richard Hayman and his Orchestra 8.559125
- 315 180 Purpose-built oddities: wind machines
- Ralph Vaughan Williams (1872–1958)**
 Symphony No. 7 ‘Sinfonia antartica’ (opening) 1:42
 Waynflete Singers / Bournemouth SO / Kees Bakels 8.550737
- 316 181 **Richard Strauss (1864–1949)**
 Don Quixote (Variation VIII) 1:13
 NSO of Ireland / Gerhard Markson 8.554175
- 317 181 National calling cards: the guitar for Spain
- Joaquín Rodrigo (1901–1999)**
 Concierto de Aranjuez (finale) 0:56
 Norbert Kraft / Northern CO / Nicholas Ward 8.550729
- 318 181 And the guitar’s poor American relative, the banjo
- Pete Seeger (b. 1919) / Lee Hays (1914–1981)**
 Washington Breakdown 0:19
 Pete Seeger / Josh White 8.120567
- 319 181 And poorer still, the mouth organ
- Max Steiner (1888–1971)**
 The Treasure of the Sierra Madre (Packing Up) 0:18
 Dino Soldo 8.225149

Track Page

- 320 181 The balalaika for Russia
Sergey Prokofiev (1891–1953)
 Romeo and Juliet (Act II: No. 14) 0:13
 NSO of Ukraine / Andrew Mogrelia 8.553184–85
- 321 181 The maracas for Mexico
Alfonso Sanchez
 The Treasure of the Sierra Madre (El Desayuno) 0:18
 Moscow SO / William T. Stromberg 8.225149
- 322 181 The bongos and the congas and a whole wealth of other drums for Africa
 and Central America 0:26
Studio example
- 323 182 The sitar for India
 Evening Raga: Bhopoli 0:17
 Irshad Khan 76001–2
- 324 182 The accordion for France (especially Paris)
Léo Ferré (1916–1993)
 Paris canaille 0:20
 Richard Hayman and his Orchestra 8.555009
- 325 182 The zither for Vienna
Anton Kárás (1906–1985)
 The Third Man (Theme) 0:25
 Dubbing from original soundtrack, Sept. 1949 Decca, DDR 14059

The Instruments of the Orchestra

Track Page

- 326 182 The cimbalom for Hungary
Traditional
Folk Dances 0:21
Ferenc Sánta and his Gypsy Band 8.550954
- 327 182 The guitar as an integral part of the orchestra
Isaac Albéniz (1860–1909), orch. Breiner
Rondeña 1:20
Moscow SO / Igor Golovschin 8.553023
- 328 182 There are whole orchestras of balalaikas.
Traditional Russian, arr. V. Andreev
Svetit Mesiats 1:02
The Ossipov Balalaika Orchestra / Nikolai Kalinin Claves CD 50–9624
- 329 182 The effect of the wordless human voice, used purely as an instrument
Ralph Vaughan Williams (1872–1958)
Symphony No. 7 ‘Sinfonia antartica’ (mvt 1) 1:27
Linda Russell / Waynflete Singers / Bournemouth SO / Kees Bakels 8.550737
- 330 183 **Claude Debussy (1862–1918)**
Nocturnes (Sirènes) 4:15
BRT Philharmonic, Brussels / Alexander Rahbari 8.550262
- 331 183 Instruments and the imitation of nature. The clarinet as cuckoo 0:42
- 332 183 **Camille Saint-Saëns (1835–1921)**
The Carnival of the Animals (The Cuckoo) 1:46
Slovak RSO / Ondrej Lenárd 8.550335

Track	Page		
333	183	The flute as an all-purpose aviary	0:14
334	183	Camille Saint-Saëns The Carnival of the Animals (The Aviary) Slovak RSO / Ondrej Lenárd	1:08 8.550335
335	183	The oboe as duck	0:36
336	184	Sergey Prokofiev (1891–1953) Peter and the Wolf (The Duck) Slovak RSO / Ondrej Lenárd	1:55 8.550335
337	184	The recording of reality. Does it work as well?	0:12
338	184	Ottorino Respighi (1879–1936) The Pines of Rome (The Pines of the Janiculum) Royal PO / Enrique Bátiz	1:17 8.550539
339	184	The recording of reality electronically reborn in new guises	0:32
340	184	Einojuhani Rautavaara (b. 1928) Cantus arcticus – Concerto for Birds and Orchestra (mvt 2) Royal Scottish NO / Hannu Lintu	1:12 8.554147
341	184	Beethoven turns avian: cuckoo, nightingale, and quail	0:26
342	184	Ludwig van Beethoven (1770–1827) Symphony No. 6 ‘Pastoral’ (Andante molto mosso) Nicolaus Esterházy Sinfonia / Béla Drahos	1:12 8.553474
343	184	Some improbable casting: the violin as braying donkey	0:33

The Instruments of the Orchestra

Track Page

344	185	Camille Saint-Saëns (1835–1921) The Carnival of the Animals (Persons with Long Ears) Slovak RSO / Ondrej Lenárd	0:47 8.550335
345	185	A truly orchestral hee-haw to be reckoned with	0:09
346	185	Felix Mendelssohn (1809–1847) Overture to ‘A Midsummer Night’s Dream’ Slovak PO / Oliver Dohnányi	0:29 8.554433
347	185	A thunderstorm in a million	0:17
348	185	Ludwig van Beethoven (1770–1827) Symphony No. 6 ‘Pastoral’ (Allegro–Allegretto) Nicolaus Esterházy Sinfonia / Béla Drahos	3:57 8.553474
349	185	The instrumental depiction of a silent world	2:07
350	186	Camille Saint-Saëns The Carnival of the Animals (The Aquarium) Slovak RSO / Ondrej Lenárd	2:20 8.550335
351	186	Saint-Saëns’s menagerie takes a curtain call.	0:24
352	186	Camille Saint-Saëns The Carnival of the Animals (finale) Slovak RSO / Ondrej Lenárd	2:09 8.550335

The Orchestra

Track Page

- | | | |
|-----|---|------------------|
| 353 | 187 The grouping of instrumental families. An additive approach. First, two violins | 1:20 |
| 354 | 187 Béla Bartók (1881–1945)
Forty-four Duos (No. 4)
György Pauk / Kazuki Sawa | 0:47
8.550868 |
| 355 | 187 A greater contrast, of both pitch and character: violin and viola | 0:27 |
| 356 | 187 Wolfgang Amadeus Mozart (1756–1791)
Duo for Violin and Viola in B flat major, K. 424 (finale, Vars 1 & 2)
Catherine Manson / Ralf Ehlers | Not released |
| | Studio example | 2:18 |
| 357 | 188 Arrival at the standard string trio: violin, viola, and cello | 0:12 |
| 358 | 188 Franz Schubert (1797–1828)
String Trio in B flat (Menuetto)
Ensemble Villa Musica | 1:09
8.550388 |
| 359 | 188 The string quartet: two violins, viola, and cello | 0:20 |
| 360 | 188 Ludwig van Beethoven
String Quartet in F, Op. 18 No. 1 (mvt 3)
Kodály Quartet | 1:53
8.550558 |
| 361 | 188 The string quintet – when the extra instrument is a second viola | 0:30 |
| 362 | 188 Wolfgang Amadeus Mozart
String Quintet No. 5 in D, K. 593 (Adagio)
Éder Quartet / János Fehérvári, 2nd Viola | 2:21
8.553105 |
| 363 | 188 The string quintet – when the extra instrument is a second cello | 0:19 |

The Instruments of the Orchestra

Track Page

364	188	Franz Schubert (1797–1828) String Quintet in C (mvt 3) Ensemble Villa Musica	2:12 8.550388
365	189	The string sextet: two violins, two violas, and two cellos	0:16
366	189	Johannes Brahms (1833–1897) String Sextet in B flat (mvt 2) Stuttgart Soloists	1:27 8.550436
367	189	The string octet: the standard string quartet times two	0:20
368	189	Felix Mendelssohn (1809–1847) Octet in E flat, Op. 20 (mvt 1) Divertimenti	2:16 Hyperion CDA66356
369	189	Double the string octet: a fully fledged string orchestra	0:15
370	189	Felix Mendelssohn String Symphony No. 2 (finale) Northern CO / Nicholas Ward	2:12 8.553161
371	189	The massed strings of a symphony orchestra	0:37
372	189	Ralph Vaughan Williams (1872–1958) Fantasia on a Theme of Thomas Tallis New Zealand SO / James Judd	2:58 8.555867
373	190	Contrasts of pitch and instrumental ‘colour’ in the woodwind section	0:44
374	190	Antonín Reicha (1770–1836) Wind Quintet in A minor, Op. 100 No. 5 (Theme) Michael Thompson Wind Quintet	1:10 8.550432

Track Page

375	190	In the First Variation it's the horn that gets the lion's share.	0:05
376	190	Reicha Wind Quintet in A minor, Variation 1 Details as above	1:28
377	190	In Variation Two the torch is handed to the bassoon.	0:07
378	190	Reicha Wind Quintet in A minor, Variation 2 Details as above	1:08
379	190	In Variation Three the oboe leads.	0:13
380	190	Reicha Wind Quintet in A minor, Variation 3 Details as above	1:12
381	190	Variation Four: conversation before returning to a solo-dominated texture	0:07
382	190	Reicha Wind Quintet in A minor, Variation 4 Details as above	1:17
383	191	And Variation Five is dominated by the clarinet.	0:04
384	191	Reicha Wind Quintet in A minor, Variation 5 Details as above	1:12
385	191	The next to be featured is the virtuoso flute.	0:07

The Instruments of the Orchestra

Track Page

386	191	Reicha Wind Quintet in A minor, Variation 6 Details as above	1:22
387	191	Individual farewells and a closing chorus	0:19
388	191	Reicha Wind Quintet in A minor, Variation 7 Details as above	0:40
389	191	A mixed group: clarinet, bassoon, horn, string quartet, and double-bass	0:19
390	191	Franz Schubert (1797–1828) Octet in F (mvt 3) Schubert Ensemble, Budapest	2:01 8.550389
391	191	The early classical symphony orchestra of Haydn and Mozart	0:34
392	192	Wolfgang Amadeus Mozart (1756–1791) Symphony No. 29 in A, K. 201 (finale) Capella Istropolitana / Barry Wordsworth	3:32 8.550119
393	192	Strings, wind, but no brass. What Haydn and Mozart never knew	0:34
394	192	Giovanni Gabrieli (1553/6–1612) Canzon 28 London SO Brass / Eric Crees	1:39 8.553609
395	192	Beethoven's Fifth: two horns, two trumpets, and three trombones join the team.	0:58
396	193	Ludwig van Beethoven (1770–1827) Symphony No. 5 (finale) Nicolaus Esterházy Sinfonia / Béla Drahos	4:28 8.553476

Track Page

397	193	From Beethoven to the massive orchestras of Berlioz, Wagner, and Mahler	0:27
398	193	Beethoven changed the face of the symphony and the orchestra forever.	0:47
399	193	Gustav Mahler (1860–1911) Symphony No. 6 ‘Tragic’ (mvt 1) Polish NRSO / Antoni Wit	1:44 8.550529–30
400	193	The cult of orchestral elephantiasis reaches its peak.	1:04
401	194	Havergal Brian (1876–1972) Symphony No. 1 ‘Gothic’ (VI: Te ergo quaesumus) Slovak Philharmonic Choir / Slovak Opera Chorus / Slovak Folk Ensemble Chorus / Lucnica Chorus / Bratislava City Choir / Bratislava Children’s Choir Youth Echo Choir / Czecho-Slovak RSO / Slovak Philharmonic / Ondrej Lenárd	1:43 8.223280–1
402	194	When large doesn’t necessarily mean loud: Debussy	1:10
403	194	Claude Debussy (1862–1918) Images (Gigues) BRT Philharmonic, Brussels / Alexander Rahbari	1:50 8.550505
404	194	A crisis of confidence; the orchestra’s survival hangs in the balance, but it still develops. The ondes martenot:	2:41
405	195	Olivier Messiaen (1908–1992) Turangalîla Symphony (Chant d’amour 1) Thomas Bloch / Polish National RSO / Antoni Wit	1:14 8.554478–79
406	195	The advent of the ‘early music’ movement brings a new vitality and freshness.	0:57
407	196	Jean-Baptiste Lully (1632–1687) Ballet de Xerxès (Gavotte en rondeau) Aradia Baroque Ensemble / Kevin Mallon	0:47 8.554003

The Instruments of the Orchestra

Track Page

408	196	Computer and synthesiser: friends or foes?	1:35
409	197	Johann Sebastian Bach (1685–1750) Concerto in D minor for two violins (Largo) Electronic realisation by Dr Manfred Clynes	2:13 Microsound International MSC 0001
410	197	A speculative look ahead Johann Sebastian Bach Mass in B minor ('Dona nobis pacem') Slovak Philharmonic Choir / Capella Istropolitana / Christian Brembeck	3:24 8.550585–86

2. Historical Profiles of the Major Instruments (and some others)

Strings



1. Violin¹

Compared with the flute, the trumpet, the oboe, and the harp, whose origins may reach back to the dawn of civilisation itself, the violin is a ‘Johnny-come-lately’. Yet although it dates from as recently as the sixteenth century, no name or year nor any precise place is associated with its invention. This is remarkable even when one considers that it may be the result of many hands and minds – an idea whose time had come. Not that it sprang into life fully formed: according to pictorial evidence it existed from the very beginning of the sixteenth century but lacked many of the distinctive features which it later acquired, including its famously beautiful (and functional) shape and its four strings. The earliest true violins had three; not until the second half of the

century, in France, do we encounter a four-stringed violin. The most famous violin makers are all Italian, but we find the first string orchestra in the royal court in France, in the 1550s. England and Germany soon followed suit, but it’s in the first great opera, Monteverdi’s *L’Orfeo* of 1607,

¹ See ‘The “Original Instrument” Debate’, p. 109

that we find the first real prototype of the modern orchestra: a mixed band, but with the violins shouldering most of the burden. By then the violin was the instrument of the hour, its popularity growing almost daily. The days when Tielman Susato could publish a collection of dances as being ‘suitable for all kinds of instruments’, which he did, in 1551, were long gone. It was with the rapid rise of the violin that the notion of a truly idiomatic instrumental style first took hold. When John Playford published his famous collection *The English Dancing Master* in 1651, exactly 100 years after Susato’s *Danserye*, its contents were so aptly written for the violin that they suffered if played on any other instrument. By the end of the century there was scarcely a town or village in northern Europe that couldn’t boast at least one resident fiddler, who in the poorer and most remote communities provided the music for every feast, wedding, and funeral. It was at this time, too, that the violin’s unique versatility led to a new career for performers as comedian and popular entertainer, itinerant fiddlers delighting audiences with a succession of baryard and bird imitations, clownish caricatures and freakish sound effects.

At the other end of the spectrum there arose in Italy a remarkable profusion of violinist-composers who raised the art of violin-playing to unprecedented levels of virtuosity and expressivity, while pioneering the new forms of the instrumental concerto and sonata. Of these, the first true master was Arcangelo Corelli (1653–1713), closely followed by a succession of others, whose music enjoys greater favour today than at any time in its history: Tartini, Torelli, Albinoni, Vivaldi, Geminiani, and Locatelli. Not coincidentally, this was also the golden age of violin makers, most of whom were also Italian (see ‘The Greatest Instrument Makers’, p. 93). With these composers, violinists, and makers, however, Italy’s long domination of European musical culture reached its climax and then rapidly declined, persisting well into the eighteenth century only in the world of opera.

The next generations of great composers were to be predominantly Germanic, and primarily keyboard players, though all but one were also violinists of professional attainment. First – all born in the same year, 1685 – came Handel, Scarlatti, and J.S. Bach, the three greatest keyboard players of their age. Then Haydn, Mozart, and Beethoven, all pianists, the last two the greatest of

their age. Handel wrote very fine violin music, Bach perhaps the best ever written: the mighty Chaconne in D minor, the crowning glory of the six sonatas and partitas for unaccompanied violin, each one a masterpiece; four violin concertos (one of them for violin and oboe); the Fourth and Fifth ‘Brandenburg’ Concertos; and six sonatas for violin and harpsichord. Haydn and Mozart wrote the finest violin music of their age (nothing to match Bach’s, however, except in the best of their string quartets); and Beethoven composed what’s widely considered to be the greatest violin concerto ever written (his only one), in addition to ten magnificent sonatas for violin and piano, six masterful trios, and possibly the greatest string quartets (what many regard as the greatest *music*) ever written.

Like the music composed for it, the violin itself underwent significant changes around the end of the eighteenth and the start of the nineteenth centuries, all designed to increase the tension of the strings, enhance the instrument’s carrying power, extend its range, and facilitate technique. The most significant changes of all, however, were not to the instrument but to the bow and its usage (see ‘The “Original Instrument” Debate’, p. 109). In the mid-1780s the French bow maker François Tourte designed the bow that was to change the history of string playing. Different in its shape, raw materials, and handling (gone now was the practice of using the thumb on the hairs to change the tension), it allowed for far greater brilliance, versatility of stroke, and durability.

By the time of Haydn’s death in 1809 the evolution of the violin itself was virtually complete. Of the modifications necessitated by the rise of the large-scale public concert and the decline of the more intimate, aristocratic *soirées*, largely accommodated in the palaces of the nobility (for details, see ‘The “Original Instrument” Debate’, p. 109), only the chin rest was to still to come – although its name is the opposite of the truth. Far from resting the chin, it enables the violinist to grip the instrument between chin and collar-bone (or upper shoulder), thus relieving the left hand of the need to support the violin’s full weight and allowing for more freedom in fingering, changing position, and controlling vibrato. But if the biggest challenges to violin makers had now been met, the challenges to players continued to mount, thanks largely to the influence of one man. The ‘Demon Fiddler’ Nicolò Paganini (1782–1840) was almost certainly the greatest

violinist who ever lived, even today, and his *Twenty-four Caprices* for unaccompanied violin represent the summit of technical difficulty for every violinist.

Other outstanding violin virtuosos of the nineteenth century, most of them also active as composers, include Louis Spohr, Henri Vieuxtemps, Henryk Wieniawski, Joseph Joachim, Eugène Ysaÿe, Ole Bull, Charles-Auguste de Bériot, Leopold Auer, and Pablo de Sarasate. Those most prominent in the twentieth century include Fritz Kreisler, Mischa Elman, Bronisław Huberman, Joseph Szigeti, Jascha Heifetz, Sir Yehudi Menuhin, Zino Francescatti, Nathan Milstein, David Oistrakh, Itzhak Perlman, Pinchas Zukerman, Kyung-Wha Chung, and Anne-Sophie Mutter.

2. Viola

The viola, or ‘alto’ as the French more informatively call it, is bigger in size and lower in pitch (and, ironically, smaller in tone) than the violin, and developed in parallel with it. It lacks the brilliance and projection of its smaller counterpart, but not its richness of tone. In some ways it’s a problematic instrument, since to duplicate the violin’s perfect equilibrium of pitch and size it would have to have a body half again as big, thus putting it beyond the reach of most players’ arms. But the size of the viola is not standardised, and will vary according to whether the maker wants it to have the ‘colour’ of a tenor or an alto, the former being more penetrating but less warm. Other contributory factors, inseparably associated with the instrument’s size, are the length of the strings, and their constitution. By the end of the eighteenth century the C-string, originally of gut, was commonly ‘wound’ with wire, over a gut or metal core; the G-string followed suit in the nineteenth. In the twentieth century it was usual to find all four strings wound, giving a steadier and more penetrating tone than even the best eighteenth- and nineteenth-century instruments, and minimising differences in character between one string and another. During the last quarter of the eighteenth century and the first of the nineteenth, the viola underwent the same sorts of changes as the violin; but despite all these modifications, its solo repertoire was minuscule compared with that of the violin, and remains so, its greatest riches

being reaped in the string quartets of Haydn, Mozart, Beethoven, Schubert, Brahms, Dvořák, Debussy, Ravel, and Bartók. The foremost concerto written for it is incontestably Mozart's *Sinfonia concertante* for violin and viola; others (all solo concertos) include those by Telemann, Bach (Sixth 'Brandenburg' Concerto), Berlioz (*Harold in Italy*, composed for Paganini), Bartók, Walton, and Schnittke. Strangely, Paul Hindemith, one of the foremost viola players of the twentieth century, left no concerto for it. The fact is that like a number of low-lying instruments the viola has traditionally had serious image problems. Two years after the death of Bach in 1750 the enormously admired and influential Johann Joachim Quantz went into print on the subject:

The viola is commonly regarded as of little importance in the musical establishment. The reason may well be that it is often played by persons who are either still beginners in the ensemble or have no particular gifts with which to distinguish themselves as violinists, or that the instrument yields all too few advantages to its players, so that able people are not easily persuaded to take it. I maintain, however, that if the entire accompaniment is to be without defect, the violist must be just as able as the second violinist.

The second violinist, note – not the first.

It was only in the twentieth century that a sequence of major virtuosos devoted themselves specifically and entirely to the viola. The founding father of the breed was the Englishman Lionel Tertis, closely followed by William Primrose, Nobuko Imai, Rivka Golani, and Yuri Bashmet. Violinists who have also enthusiastically embraced the cause of the viola include Yehudi Menuhin, David Oistrakh, Pinchas Zukerman, Michael Tree (violist of the Guarneri Quartet), and Jaime Laredo.

3. Cello

The natural bass of the violin family, the cello (short for the Italian ‘violoncello’) was born and grew up, as it were, alongside the violin and the viola. Like the violin, it started out with only three strings, though fairly rapidly acquiring a fourth (c. 1553). Less quickly solved was the matter of its size, which varied considerably throughout the sixteenth and seventeenth centuries, ranging from a minimum body length of seventy-three centimetres to a maximum of eighty centimetres. Not until 1710 or so did it become anything like standardised, when Antonio Stradivari stabilised it at seventy-five to seventy-six centimetres, where it has remained, more or less, ever since. It wasn’t until the eighteenth century, however, that the vibrating length of the strings was normalised at about sixty-nine centimetres – this at the same time as the necks of the other string instruments were lengthened to extend their respective ranges. But the cello seems to have had more trouble settling down than its siblings. In the late seventeenth and early eighteenth centuries, there were some experimental cellos with five strings, and other, smaller instruments whose range was consistent with other models but which could be played in the violin position. None other than J.S. Bach has been credited with inventing such an instrument, as he may also have invented the so-called ‘violoncello piccolo’ required in several of his cantatas. Unfortunately no specimens of either instrument have survived. By the beginning of the nineteenth century the cello’s evolution was basically complete, missing out only the ‘spike’ or ‘end-pin’, which didn’t become standard until the second half of the century. In the twentieth century certain cellists adopted a bent spike, and this was more than a convenience: it had a direct bearing on the point at which the bow touched the strings and eased finger work at the upper end of the fingerboard.



For the first 150 years or so of its career the cello played a predominantly functional role, ‘doubling’ the bass line of the harpsichord, whatever the nature of the ensemble; it added to the

textural warmth of the overall sound, but was seldom given any opportunity for self-expression or true interpretation. Only in the late seventeenth century did it emerge as a soloist in its own right. The first work treating the cello as a solo instrument was written in 1675: a *Ricercare* by Domenico Gabrielli (not to be confused with Andrea or Giovanni Gabrieli). A further quarter of a century, however, was to elapse before the emergence of the full-blown sonata for cello and harpsichord. Its most important composers included Torelli, Marcello, and Vivaldi. It was Vivaldi, too, who wrote the first concertos for cello to have found a place in the mainstream orchestral repertoire. But the greatest cello music of the eighteenth century, perhaps of any century, is to be found in J.S. Bach's six suites for unaccompanied cello: astonishing music of enormous breadth and grandeur, which fairly defies one to believe that this could have been written for an essentially one-line instrument.

Except for its parts in the quartets of Mozart and Haydn the cello fared less well in the early Classical period, though many very attractive works were written for it (mostly by the likes of Wagenseil, Monn, Holzbauer, Stamitz, etc. – composers little remembered today). More substantial and durable, and still very much in the repertoire, are the cello concertos by Boccherini and Haydn. But from Mozart, except in his trios, quartets, and quintets, we have nothing. No sonata, no concerto, no variations. When it comes to Beethoven, however, things change. His five sonatas for cello and piano – two early, one middle, two late – are all superb works, particularly the last three. Nor should we forget the cello part in Beethoven's Triple Concerto. No cellist is likely to: it's among the most technically demanding challenges in the repertoire.

This is not the place to investigate the reasons why, but one very striking fact about the cello music of the nineteenth century – the exact opposite of the violin music of the eighteenth – is that while most of it was written by cellists, all the greatest works, without exception, were composed by non-cellists: Beethoven (as just mentioned), Schubert (the 'Arpeggione' Sonata, the two piano trios, and, perhaps above all, the C major Quintet with two cellos), Mendelssohn (the two sonatas and the *Variations concertantes*), Schumann (the Cello Concerto and a number of superb

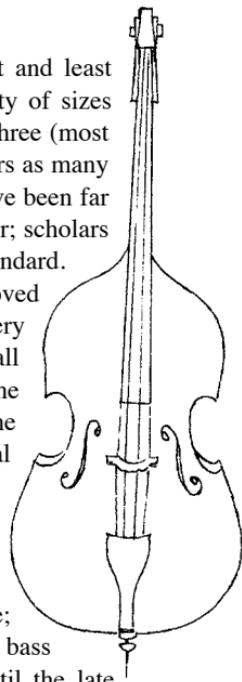
chamber works), Chopin (the late G minor Sonata), Brahms (the two sonatas with piano, the Clarinet Trio, the Double Concerto with violin), Dvořák (the B minor Concerto), Richard Strauss (*Don Quixote*), and so on. The most important overall development, however, had nothing to do with the artistic merit of the works in question: it was the final liberation of the cello, after centuries of confinement, from the bass line. From Beethoven onwards, in the orchestra and out of it, composers increasingly wrote independent melodic lines for cellos to play in their middle register, while leaving the bass to the basses.

The domination in the nineteenth century of cello music composed by non-cellists continued in the twentieth, with major works by Rachmaninov, Debussy, Ravel, Elgar, Bloch, Hindemith, Prokofiev, Shostakovich, Britten, Penderecki, and a number of others. Amongst cellists, one name towered above all others: Pablo Casals, the great Catalan musician (an excellent pianist, conductor, and composer as well) who rediscovered, performed, and recorded the unaccompanied suites by Bach and won for the cello an unprecedented prominence and popularity. Other major figures (all generously recorded) include Emanuel Feuermann, Gregor Piatigorsky, Gaspar Cassadó, Enrico Mainardi, Paul Tortelier, Pierre Fournier, Maurice Gendron, Zara Nelsova, Mstislav Rostropovich, Leonard Rose, Janos Starker, Jacqueline Du Pré, Mischa Maisky, Lynn Harrell, Yo-Yo Ma, Natalia Gutman, and Maria Kliegel.

4. Double-bass

The *basso profundo* of the string family, the double-bass is the largest and least standardised of all the string instruments, coming in a surprising variety of sizes with a remarkable diversity in the number of strings, some having only three (most popular in the nineteenth century and for a portion of the twentieth), others as many as six. Nor is there much conformity when it comes to tunings. There have been far more tunings for the double-bass than for all the other strings put together; scholars have put the number as high as fifty, which is extraordinary by any standard.

And, as befits its solid, imposing appearance, the instrument has proved hardy. Still played in orchestras today are double-basses made by the very earliest makers, dating back to the middle of the sixteenth century. Like all the members of their family they have been heavily modified in the intervening centuries, and for the same reasons, but not necessarily at the same times or in the same places. Confusing the picture from an historical point of view is the fact that different countries have preferred different models, different stringings, and different tunings at one and the same time. And even within a single country, fashions, as ever, have proved fickle. In Italy, at the start of the seventeenth century, five strings were in favour but, within a generation, the five had been exchanged for three; whereas in Germany, throughout the Baroque era, the five- or six-string bass was the instrument of choice. In England, it was all but unknown until the late seventeenth century, and France seems actively to have shunned it until early in the eighteenth. In the nineteenth century, however, the instrument had become accepted in virtually all European countries and, for a change, there was general agreement that three strings were in and more was out. But diversity of size persisted, ranging from the so-called ‘utility’ basses favoured in parts of Italy and Germany (these having a body length of a mere thirty-six inches) to the ‘octo-bass’,



which stands more than thirteen feet high and is now preserved in the Museum of the Paris Conservatoire. The strings of the octo-bass are ‘stopped’ by seven pedals, operated by the player, who is comfortably installed on a wooden platform which affords both an excellent view of the orchestra and a rare opportunity to look down on the conductor.

By the middle of the eighteenth century double-basses were to be found in every European court orchestra, often outnumbering the cellos. This being the case, it’s surprising that the paths of the two instruments didn’t diverge sooner than they did (see above, under ‘Cello’).

Improbably, as some may think, the double-bass has had its fair share of virtuosos, of whom the most famous have been Domenico Dragonetti (1763–1846), also a composer and a friend of Beethoven; Giovanni Bottesini (1821–1889), one of the most resourceful composers for his instrument (Naxos 8.554002); and Serge Koussevitsky (1874–1951), for a quarter of a century the conductor of the Boston Symphony Orchestra (1924–49). All three favoured the three-string bass. More recent virtuosos include the American Gary Karr and the Canadian Joel Quarrington (Naxos 8.554002). The solo repertoire for the double-bass is surprisingly large, dating back to the late seventeenth century and including more than 200 concertos, twenty-eight of them composed within the four-year period of 1765–9. The twentieth century saw the repertoire increase dramatically due to an unprecedented profusion of commissions.

Woodwind

1. Flute



The flute is among the oldest instruments in the world, its history reaching back to the Stone Age, two or three million years ago. Repeatedly mentioned in the Old Testament, it also played a prominent part in the musical life of ancient Egypt. Put at its most basic, the flute as we know it today is a longish metal tube, with holes of various sizes for producing the various pitches, and a ‘blow hole’ at one end which the player blows across rather than directly into. Since, unlike the oboe and clarinet, the instrument is held horizontally rather than vertically it is known as the ‘transverse flute’, to distinguish it from the end-blown flute better known as the recorder. Until the nineteenth century it was traditionally made of wood (hence its membership of the woodwind family). Today it is frequently made of silver, though gold and even platinum flutes are played by some of its wealthier devotees. It has been in widespread use since the sixteenth century, its most high-born exponent being Frederick the Great, King of Prussia (1712–1786), who was also an accomplished composer. Among his court musicians were Carl Phillip Emanuel Bach (eldest son of J.S., and then more famous than his father) and Johann Joachim Quantz. The greatest flautist of his time, and author of the most famous treatise on flute-playing ever written, Quantz composed for his king more than 300 concertos and 200 sonatas for the flute, quite a number of which are still available today. Such was its popularity in England that in 1744 an all-flute orchestra of twenty-six players was founded in Manchester. A century or so later the Isle of Man boasted an orchestra consisting of a handful of violins, one cello, one clarinet, and sixteen flutes (most orchestras today have only two). And in Ireland, in the 1860s, the Anacreontic Society passed a rule in Dublin forbidding the use of more than twenty flutes. By that time the instrument

had been virtually reinvented by the German virtuoso and instrument maker Theobald Boehm (see ‘The Greatest Instrument Makers’, p. 93), whose design and system of fingering have been near-universally adopted throughout the world. In addition to its long-established membership of the orchestra, the flute has been featured as soloist in concertos and sonatas by Vivaldi, Bach (both J.S. and C.P.E.), Handel, Mozart, Kuhlau, Godard, Reger, and Debussy, among many others. A late arrival on the orchestral scene was the **alto flute**, invented by Boehm around 1855 and often miscalled the bass flute (there is in fact such an instrument but it has never found a significant place in the orchestra, or indeed anywhere else outside dedicated flute clubs). Roughly eight inches longer than the conventional flute, and with a wider bore (the size of the interior ‘tube’), the alto flute has a deeper, more languid quality and is memorably used in a number of twentieth-century works, including Stravinsky’s *The Rite of Spring*, Ravel’s *Daphnis et Chloé*, and Holst’s *The Planets*, and in more recent works by Britten, Stockhausen, and Boulez.

The most famous flautists of modern times, all well represented on disc, include Marcel Moyse, Jean-Pierre Rampal, Aurèle Nicolet, James Galway, and Emmanuel Pahud.

2. Piccolo



The highest in pitch not only of the flute family but of all wind instruments, the piccolo is half the size of the standard concert flute and sounds an octave above it, but is otherwise identical. It uses the same fingering, is made from the same material (metal, wood, or wood with a metal ‘head joint’), but the Boehm system was adopted for it very much later than for the flute, so one still finds the odd piccolo with a conical bore. It played a relatively minor role in the Classical symphony orchestra, certainly in its earlier phase, but was widely used in the Baroque era, most notably in the orchestral music of Rameau and as the occasional soloist for a concerto (particularly those of Vivaldi). Despite its small size it can make a very loud, shrill noise which

can normally penetrate even the thickest orchestral texture. Beethoven was one of the first composers to feature it in a symphonic context (Symphonies Nos 5 and 6), but thereafter it became a standard member of the orchestra, on occasion given particular prominence, as in Tchaikovsky's ballet *The Nutcracker*.

3. Oboe



Oboes of one kind or another have been known in Europe for roughly 800 years, which makes them a curiously late arrival on the scene; in Asia and the Middle East they have been played and well documented for nearly 5,000 years. The definitive feature which separates them from the flute and clarinet is the use of a double-reed. In Europe this is held between the player's lips, but in most other cultures it has traditionally been taken entirely into the mouth, in conjunction with a metal disc over which the lips are stretched. Like the clarinet, but not the flute, oboes are conical in shape, widening into a bell-like 'amplifier' at their lower end. In Europe the modern oboes' antecedents were called shawms (also schalmeys, pommers, and bombard). As the last name suggests, they could be very loud and piercing in tone, and their rather raucous voices in the Middle Ages and early Renaissance give little hint of the subtlety, deep expressivity, and poignancy which have characterised the oboe from the Baroque to the present day. The name 'oboe' derives from the French 'hautbois' – literally 'high wood' – which may refer either to their pitch and substance (traditionally wood or ebonite) or the shrillness which characterises their medieval incarnation. Even in the seventeenth century they were the loudest of all instruments except for the trumpets, and in France they were standard members of Louis XIV's military bands. Yet less than a hundred years later, in the works of Vivaldi, Bach, and Handel, the oboe has become (as it has remained) the most sensitive and emotionally penetrating of all the wind instruments. Its evolution, however, has been a slow, organic development. There is no one

figure, like Boehm in the case of the flute, no one moment, to which one can point and say, ‘This is where the modern oboe begins’. But from the time of Mozart and Haydn (c.1760–1810), the trumpeting shawms of an earlier era are basically forgotten. In the Romantic age that followed, the oboe is prized above all for its refinement, sensitivity, and unforced eloquence. Outstanding concertos have been written for it by Albinoni, Vivaldi, Telemann, Handel, Bach, Cimarosa, Mozart, Bellini, Richard Strauss, Vaughan Williams, and others.

If the oboe proper is the soprano of the clan, the **cor anglais**, or ‘English horn’, is the alto.



As with all the deeper-voiced relatives of mainstream instruments, the cor anglais is longer than the oboe. To compensate for this, the reed is set in a metal tube which doubles back on itself, bringing it comfortably in line with the player’s mouth: thus ‘anglais’ (English) is here a corruption of the French ‘anglé’ (angled). But the ‘cor’ (horn) is a complete misnomer: the instrument isn’t a horn at all. While it was an occasional visitor to the orchestras of Mozart and Haydn, it wasn’t until the days of Wagner, Liszt, Brahms, and Dvořák in the second half of the nineteenth century that it became anything like a regular member. The most famous cor anglais solo in the repertoire is in the second movement of Dvořák’s Symphony No. 9 ‘From the New World’. This and others can be heard on CD 3.

Lying between the pitch of the oboe and the cor anglais is the **oboe d’amore**, the family’s mezzo-soprano. Relatively seldom encountered in the repertoires of the nineteenth and twentieth centuries, it was a great favourite of Bach (Naxos 8.554169), who used it in more than sixty compositions. The distinction between the oboe d’amore and its siblings, however, isn’t one of pitch alone. Like each of its family it has a very special tone of voice, a quality of sound unattainable by any other instrument. It was for precisely this reason that Ravel featured it in his orchestral showpiece *Boléro* (CD 3, track 30). Another example of its post-Bachian use is in Richard Strauss’s *Sinfonia domestica* (the only work to depict a baby in the bath).

Many of the world's most musical and sophisticated instrumentalists are oboists but very few have emerged as major international soloists, mainly due to the relative smallness of solo repertoire. Three in particular, however, have made a major contribution to public awareness of the instrument and its possibilities: namely Leon Goossens, Evelyn Rothwell, and Heinz Holliger.

4. Clarinet



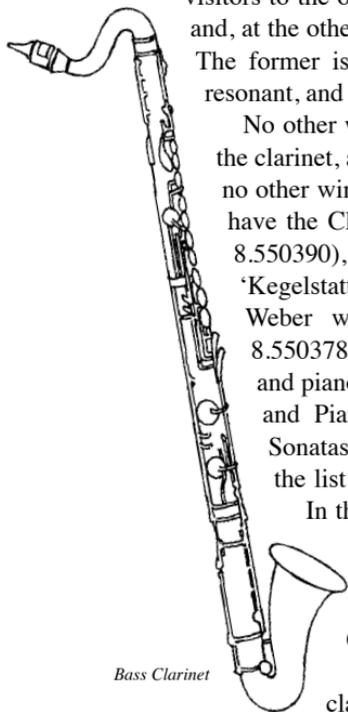
The clarinet, whose family stretches back at least to the era of ancient Egypt, is distinguished from the oboe by its use of a single reed, but shares its conical shape and ‘bell’. Rather than being an import from the East, the first clarinets seem to have been indigenous to Europe – more specifically, to Germany. Its earliest known ancestor was a primitive instrument made from the shin bone of a sheep with a cow horn for a bell, but it derives more directly from the seventeenth-century *chalumeau*: a small, keyless pipe similar in size and shape to a recorder. The evolution of the clarinet reached its peak in the workshops of Johann Christoph Denner and his son, who fitted it with keys near the beginning of the eighteenth century. In this early form the instrument sounded more like a trumpet than the clarinets we know today, and its name comes straight from the word *clarin* (also *clarino*), commonly used to describe trumpets of the seventeenth and early eighteenth centuries. Although the transformation was effectively completed by 1720 the clarinet was slow to find a regular place in orchestras. Bach never used it, though its life and his overlapped for thirty years. The composers who pioneered the orchestral use of clarinets include Rameau, Stamitz, Gossec, and latterly Mozart (though the instrument was unknown in his birthplace, Salzburg, during most of his residence there). Not until the age of Beethoven (from about 1790 to 1827) did it become securely established, since when virtually every mixed

orchestra has included at least two. These are both so-called ‘transposing’ instruments: the first (and most popular *outside* the orchestra) is the clarinet in B flat, which plays one whole scale-step below the notes written into the score; the second is the clarinet in A, which plays a minor third below the written text. Of the two, the B flat clarinet is the more brilliant. Two occasional visitors to the orchestra are the small, high-pitched **soprano clarinet** in E flat and, at the other end of the spectrum, the **bass clarinet** (see CD 3, tracks 34–5). The former is rather shrill and trumpet-like, the latter soft-toned, smoothly resonant, and surprisingly refined.

No other wind instrument has anything like the same versatility of tone as the clarinet, and in agility only the flute can match it. Small wonder, then, that no other wind instrument has inspired as great a repertoire. From Mozart we have the Clarinet Concerto (Naxos 8.550345), the Clarinet Quintet (Naxos 8.550390), the Clarinet Quartets (Naxos 8.550390, 8.550439), and the ‘Kegelstatt’ Trio for Clarinet, Viola, and Piano (Naxos 8.550439); from Weber we have two Clarinet Concertos and a Concertino (Naxos 8.550378), a Clarinet Quintet (Naxos 8.553122), and works for clarinet and piano (Naxos 8.553122); from Beethoven the Trio for Clarinet, Cello, and Piano (Naxos 8.553389); from Brahms the two superb Clarinet Sonatas (Naxos 8.553121) and the Clarinet Quintet (Naxos 8.550391) – the list goes on. And almost every one of these works is a masterpiece.

In the twentieth century the clarinet was also central to the birth and growth of jazz, a fact reflected in the clarinet concertos of Stravinsky and Copland. Other notable twentieth-century concertos include those by Nielsen, Finzi, Milhaud, and Corigliano.

Among the siblings and close cousins of the ‘standard’ clarinets in A and B flat are three in particular which play a



Bass Clarinet

secondary but still significant part in the modern symphony orchestra. Of these, the most peripheral is the **basset horn**, which was invented in Bavaria around 1765 and found an early champion in Mozart, who included it in some twenty works, such as the *Serenade for Thirteen Wind Instruments* and the Requiem. It then suffered roughly a century of neglect before Richard Strauss took it up in some of his orchestral works. It, too, is a transposing instrument, sounding a perfect fifth lower than written, and boasts a range of four full octaves.

The **alto clarinet** is a virtual stranger to the symphony orchestra, used almost exclusively in military bands. Not so its deeper-toned sibling, the **bass clarinet**, which has been a much-prized colour in the orchestral palettes of such diverse composers as Wagner (especially in *Tristan und Isolde* and *The Ring of the Nibelung*), Franck (Symphony in D minor), Tchaikovsky (*Manfred*, *The Voyevoda*, Symphony No. 6 'Pathétique'), Meyerbeer (*Les Huguenots*), Debussy ('Iberia' from *Images*), Mahler, Sibelius, Ravel, Prokofiev, Shostakovich, Khachaturian, and Grofé (all in many works). Still deeper is the lugubriously sinister **contrabass clarinet** which exists in two forms, one pitched a perfect fifth below the bass clarinet, the other an octave below it. A much rarer visitor, used mainly in French military bands, it nevertheless makes notable contributions to Dvořák's *The Devil and Kate*, Schoenberg's *Five Orchestral Pieces*, and Xenakis's *Polytope*.

The most famous clarinetists, all orchestral veterans, include Anton Stadler, who inspired Mozart, Heinrich Baermann, who inspired Weber, and Richard Mühlfeld, who inspired Brahms; and, in the age of recording, Benny Goodman (best known in jazz but also commemorated in works by Bartók, Copland, and others), Reginald Kell, Frederick Thurston, Jack Brymer, Gervase de Peyer, Thea King, Richard Stoltzman, and Sabine Meyer.



Alto Saxophone

5. Saxophone

The saxophone family was a late arrival on the orchestral scene. Dating from as relatively recently as 1840, they are named after their inventor Adolphe Sax of Brussels (see ‘The Greatest Instrument Makers’, p. 93). Unlike their close relatives, the clarinet, oboe, and bassoon, no member of the saxophone family has established a regular place in the symphony orchestra. In jazz, on the other hand, as in bands of many kinds, they have become virtually indispensable. Made of brass or some other metal, they have a single reed, like the clarinet, but a conical bore, like the oboe. There are six members of the clan, ranging from the high-pitched **soprano saxophone** in E flat to the resonant **bass saxophone** in B flat. The most popular and familiar, both in jazz and concert music, is the **alto saxophone**. The family seems to have had a particular appeal to French composers, solos having been written by Delibes, Ambroise Thomas,

Saint-Saëns, Bizet, D’Indy, and Ravel, but Richard Strauss deploys a full quartet of saxophones in his *Sinfonia domestica*. The most famous saxophone solo in the repertoire comes in Ravel’s extraordinarily effective orchestration of Mussorgsky’s piano suite *Pictures at an Exhibition* (CD 3, track 51).



Soprano Saxophone

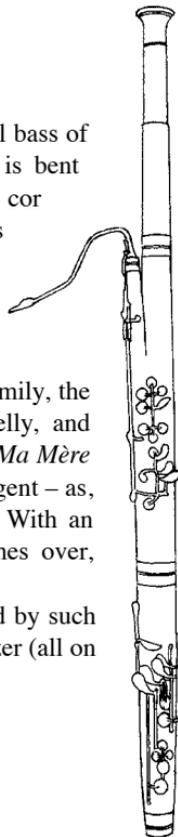
6. French Horn (see under 'Brass')

7. Bassoon

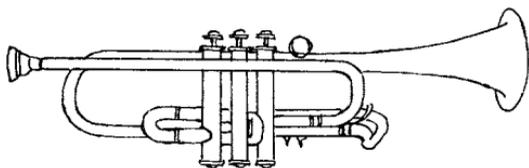
Although there is a bass oboe (seldom encountered), the bassoon is the natural bass of the oboe family. Bass invariably means big, and the tube of the bassoon is bent double, the first half going downwards, the second upwards. As with the cor anglais, the reed is fitted to a thin metal tube, known as the crook. For all its underrated eloquence, the remarkably consistent, warm, faintly 'fuzzy' tone of the bassoon blends beautifully with other instruments, most notably the horn and other members of the wind section. (For more, see 'Instrumental Typecasting', p. 101.)

Many large orchestral scores find a place for the *basso profundo* of the family, the **contra-bassoon** (also known as the double-bassoon). Too grumbly, gravelly, and grunting to be much of a melodist (though it shows some potential in Ravel's *Ma Mère l'oye* – Mother Goose, CD 3, track 70), it makes a splendidly dark colouring agent – as, for instance, at the opening of Ravel's *Piano Concerto for the Left Hand*. With an overall length of sixteen feet, the tubing is actually bent double three times over, making four vibrating columns in all.

The solo bassoon repertoire includes concertos by Vivaldi and Mozart, and by such minor but attractive composers as Lindpaintner, Molter, Kalliwoda, and Kreutzer (all on Naxos 8.553456).



Brass



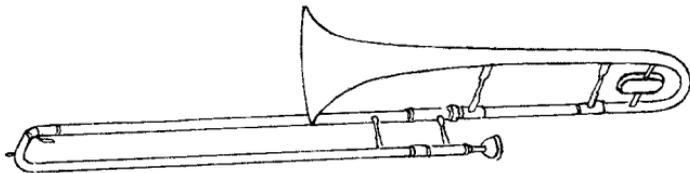
1. Trumpet

Already in the fourteenth century, long before the orchestra as we know it, the trumpet was a high-profile instrument – quite literally. As in other and earlier cultures, it was associated exclusively at this time with military and ceremonial functions. So exclusive was it to the nobility that only official court trumpeters and their apprentices were allowed to play it. Not until the advent of the seventeenth century did it make its way into the realm of ‘art music’, most notably in Monteverdi’s opera *L’Orfeo* (Naxos 8.554094–95) in 1607. Thirty years on, it had so far escaped its former exclusivity that a manual – *Modo per imparare a sonare di tromba* (Method of Learning to Play the Trumpet) – was published (in 1638) for anyone with the literacy to read it. By the end of the century the trumpet’s appearance in operas and cantatas was more or less taken for granted throughout the capital cities of western Europe. Henry Purcell’s most famous vocal duet – ‘Sound the Trumpet’, from *Come, Ye Sons of Art Away* (1694) – derives much of its tremendous exhilaration from its vocal imitation of the sound and style of the ceremonial trumpet. It was during this time that the art of playing virtuoso passages at a very high register – the so-called clarino style – was pioneered (CD 4, track 2). And all this was on the ‘natural’ trumpet, a plain brass tube without any of the holes, valves, keys etc. designed since then to lighten the trumpeter’s task. Everything was done by the diaphragm and lips of the player. That so much was made possible by so little stands as one of the most heroic feats in musical history.

Even so, there was still much that the trumpet could not do. Many notes were unavailable to it, there were only a few keys in which it could navigate properly, and it couldn't modulate from one key to another. How ironic it is that by the time the valve trumpet was invented in 1813, solving all these problems, the greatest trumpet music had already been written: by Gabrieli, Purcell, Vivaldi, Bach, Telemann, Handel, and Haydn, to name only some. What the discovery of valves did do was to lessen the formidable difficulties entailed in playing this magnificent repertoire, and to liberate the trumpet as a fully functional member of the orchestra. The closely related **cornet**, invented in the 1820s, was initially preferred to the trumpet because of its smoother, warmer sound and its superior technical flexibility; but since then the trumpet has so overcome its transitional insufficiencies that the cornet has become for the most part orchestrally irrelevant, although it remains a stalwart of the brass band tradition (but see CD 4, track 11). The medieval and renaissance **cornett**, despite its name, was actually a wind instrument, and though it was used by Monteverdi in the earlier part of the seventeenth century it has no place in the story of the modern orchestra.

Because of its ceremonial function the trumpet has always had its outstanding virtuosos, but none has passed into folklore, in the way that Paganini, the 'demon fiddler', has. The rise of the world-famous trumpeter coincides with the birth and development of recording, and its stars include Roger Voisin, Adolf Scherbaum, Maurice André, John Wallace, Gerard Schwarz, HMkan Hardenberger, and the multi-faceted Wynton Marsalis, who was the first to win equal renown in jazz and 'classical' circles.

2. Trombone



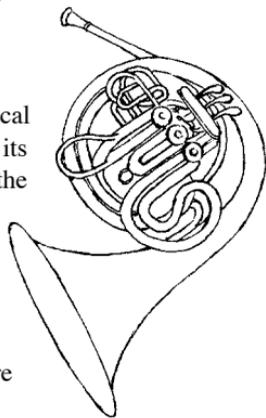
Although it has its origins in the fifteenth century, the day before yesterday by comparison with the trumpet, the trombone developed faster than any of its siblings in the brass section, reaching its present form, as far as shape and overall design are concerned, within a century of its birth. Through an ingenious sliding mechanism, following the principle of the piston (as in the railway engine), the overall length of tubing can be varied at high speed. Unlike the trumpet, from which it developed, the trombone can quite audibly ‘slide’ from one note to another, making it in its most recent incarnation a natural for the jazz band, and for satirical caricature (CD 4, track 34). While it derives both its name and nature from the trumpet – trombone meaning ‘large trumpet’ (*tromba*) – its tone is quite noticeably different in character (less brilliant, more solemn and dignified), this due mainly to its larger mouthpiece. Though ranging in its day through many sizes, encompassing everything from the soprano to the *basso profundo*, its tones in the modern orchestra are unequivocally masculine, providing an orchestral equivalent of the barber-shop quartet – the **tenor**, **tenor-bass**, **bass**, and **double-bass** trombones, respectively – though resemblances to the vocal genre stop there. In today’s orchestras the bass trombone has been largely superseded by the tenor-bass.

The medieval and early Renaissance trombone, or sackbut (from the French *saqueboute* – ‘pull-push’), often had a narrower bell than its modern equivalent, and thus a softer tone, allowing it to blend well with string ensembles. Among the first pieces specifying trombones in their scoring are the magnificent choral *Sacrae symphoniae* and the purely instrumental *Canzoni*

e Sonate composed by Giovanni Gabrieli in and around the year 1597 (Naxos 8.553609, 8.553873; also CD 4, track 24). Used only occasionally by Bach and Handel, and then more as a colouring agent than for its individual properties, the trombone first came into its own, orchestrally speaking, in the opera *Alceste* by Christoph Willibald Gluck (1767). More striking is Mozart's later use of them in his operas *Don Giovanni* (1787) and *Die Zauberflöte* (The Magic Flute, 1791), where they are given moments of real prominence. It was Beethoven, however, in the finale of his Fifth Symphony (CD 4, track 30), who first introduced them into the symphonic repertoire, yet strangely it wasn't until the 1850s, thanks largely to Berlioz and Wagner, that they became a standard part of the orchestra. Nor is it easy to understand the disproportionately few solo works prior to the twentieth century. Trombone concertos in the eighteenth century number little more than a handful (but see Naxos 8.553831), most of them written for alto trombone, before the ascendancy in the nineteenth century of the tenor, which has remained the favourite of composers, players, and listeners alike. Outside the world of jazz the trombone has never acquired anything like the popularity of the trumpet, and its greatest players are known for the most part only by aficionados.

3. French Horn

The immediate forerunner of today's orchestral horn was more practical than musical in inspiration. It was designed for the hunt, and owes its familiar circular shape to the need for it to fit comfortably over the shoulder when not being used, thereby allowing the rider both hands for the reins. It was little more than a coiled metal tube with a trumpet-like mouthpiece at one end and a bell at the other. Its function was to be loud, blaring, and viscerally rousing, and it fulfilled it ideally. In fact, if not in appearance, it was basically a decorous bugle without military connotations. At what point it began to evolve into a more

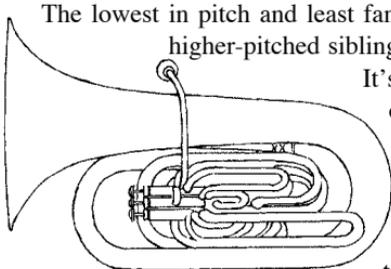


musical instrument is hard to say, but by the end of the seventeenth century a new, smaller version had begun to appear with increasing frequency; and by the second decade of the eighteenth this had infiltrated the orchestra, though its harsh, trumpet-like blats earned it an early reputation for vulgarity. The smooth, mellow, velvety tone of the later French horn wasn't yet even a dream. By the middle of the century, however, it was becoming a reality. Whatever sound Bach had in mind when he wrote his first 'Brandenburg' Concerto and the 'Quoniam tu solus sanctus' of the B minor Mass (CD 4, track 47), both of which prominently feature the horn, it was certainly not crass and vulgar. By the time he died, exactly midway through the eighteenth century, the horn was well on its way toward the warmth and sophistication that would endear it in the nineteenth to Brahms, Wagner, Bruckner, Mahler, and Richard Strauss. To say that it came of age with Mozart would be neat but unjust. His four concertos and the Quintet for Horn and Strings are magnificent – the best horn music since the two works by Bach just mentioned – but it would be wrong to pass over the wonderfully enjoyable if lightweight concertos of Vivaldi, Telemann, Handel, and Leopold Mozart (Naxos 8.550393), all of which preserve the invigorating, outdoorsy healthiness of the hunt.

The evolution of the horn during Mozart's lifetime was considerable. In 1760, or thereabouts, the German horn player Kölbel designed a new horn with a modified bell and a number of holes covered by keys – the first such experiment in the realm of the brass. A decade later, another German horn player, one Hampel of Dresden, found that the range and sequence of notes on the 'natural' horn could be increased by the simple expedient of a fist in the bell, tightened or loosened according to the desired result. It is to this method of playing, not to a different instrument, that the name 'hand horn' refers. Near the end of Mozart's life the horn's range was further enhanced by the introduction of 'crooks', the same sort of additional tubing used to extend the capacity of trumpets. The combination of crooks and 'stopped' notes (those produced by the fist) overcame most of the horn's original deficiencies, but inadvertently created a new one. The tone colour of the 'stopped' notes was markedly different from that of the 'natural'. And the changing of crooks to suit the music at hand was a cumbersome and time-consuming

business. With the invention of valves in 1813, however, these problems were also overcome, and the technique of horn-playing was revolutionised. Even so, it remains one of the most difficult of all instruments to control. Its most famous exponents in modern times include Aubrey and Dennis Brain (father and son), Alan Civil, Barry Tuckwell, Hermann Baumann, Dale Clevenger, Radovan Vlatković Anthony Halstead, and Michael Thompson.

4. Tuba



The lowest in pitch and least familiar voice in the immediate brass family, the tuba, like its higher-pitched siblings, exists in several forms, of which the highest is the **tenor**.

It's the **bass tuba**, however, which claims seniority in the orchestra and which best conforms to the popular stereotype: the bumbling, flatulent grandfather who contributes the 'oom-' to the standard, waltz-type accompaniment, leaving the 'pah-pah' to more buoyant instruments above it. But the deepest of the family is the **double-bass tuba** – like the tenor, an occasional visitor to the orchestra rather than a full-

time member. Its lyrical properties can be elusive, to say the least, but Wagner exercised them, at times quite prominently, in his famous tetralogy of operas *The Ring of the Nibelung* (most notably at the beginning of *Siegfried*). Despite its grandfatherly image the tuba is by far the youngest member of the brass family, dating from as late as the 1820s. In addition to his use of conventional tubas, Richard Wagner designed his own sub-species, naturally known as **Wagner tubas**, for use in the *Ring* cycle. These are effectively hybrids (half tuba, half horn) which cover a range corresponding broadly to that of the horn and combine the agility of the cornet with the mellow tonal richness of their more conventional cousins. They have also been used by Bruckner (Symphonies Nos 7–9), Richard Strauss (*Eine Alpensinfonie*, *Elektra*, *Die Frau ohne Schatten*), and Schoenberg (*Gurrelieder*). 'Wagner tubas' are commonly used in groups of four (two tenor, two bass) and come as standard issue in almost every opera house and symphony orchestra.

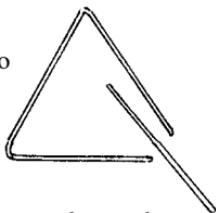
Much less common in the orchestra is the **euphonium** – a close cousin of the tenor tuba. While its warm, sonorous tones have earned it an honoured place in military and civilian brass bands, its comparative lack of agility, and its somewhat ‘heavy’ presence, especially in the upper register, have generally rendered it an unsatisfactory substitute for the tenor tuba proper in an orchestral context.

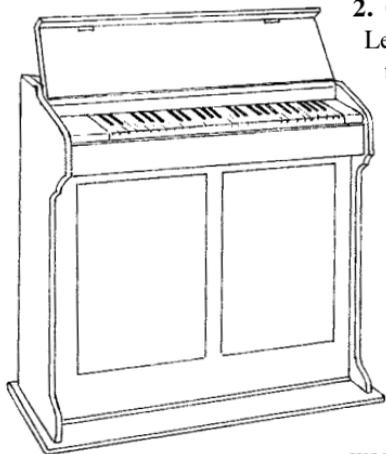
Percussion

1. Triangle

The smallest instrument in the orchestra, the triangle is a thin steel rod, bent into a triangle with an opening at one end, and struck by a steel beater (a curiously heavyweight term to apply to such a delicate object). Despite its size, its tone is extraordinarily penetrating and can pierce through all but the heaviest orchestral textures – illustrated in the finale of Beethoven’s Ninth Symphony.

Belonging to the family of untuned percussion, its history goes back at least to the tenth century. In its medieval form it usually had rings strung along the lower bar, giving it a kinship with the jingled tambourine. Often depicted in paintings in the hands of angels, it has always had a role in secular music as well as sacred. Throughout the Middle Ages and the Renaissance, it was widely used as an accompanist to the pipe, recorder, or flute. The first recorded instance of its use in an orchestra dates from 1710, and we find it in major works by Haydn (Symphony No. 100 ‘Military’), Mozart (*Die Entführung aus dem Serail* – The Abduction from the Seraglio), Beethoven (as mentioned), Liszt (Piano Concerto No. 1 in E flat; CD 5, track 4), Wagner (*Die Meistersinger von Nürnberg*, *Die Walküre*, *Siegfried*), Grieg (*Peer Gynt*), Elgar (*Enigma Variations*), and innumerable waltzes and polkas by the Strauss family.





2. Celeste (or celesta)

Legend has it that Tchaikovsky was the first composer to use the newly invented celeste, in his ballet *The Nutcracker* of 1891. Wrong on all counts. Tchaikovsky himself had used it before, and it was far from brand new in 1891. Although it wasn't patented until 1886, by the Mustel family of instrument makers in Paris, it had been around since 1880 and had been heard, that very year, at the Opéra national de Paris-Bastille in Charles-Marie Widor's *La Korrigana*. Resembling a very small upright piano, it is in fact a form of key-operated xylophone. Its sweet, charming, fairy-like tones are instantly recognisable, never more enchantingly than in Tchaikovsky's 'Dance of the Sugar Plum Fairy' from *The Nutcracker* (CD 5, track 53). Prominent use of it

was later made by Richard Strauss in his opera *Der Rosenkavalier* and by Bartók in his aptly named *Music for Strings, Percussion and Celeste*. An interesting parallel development, also patented by the Mustels, was a keyboard-operated rank of tuning forks, called the typophone, which enjoyed a minor concert and domestic career which lasted until the 1930s.

3. Tambourine

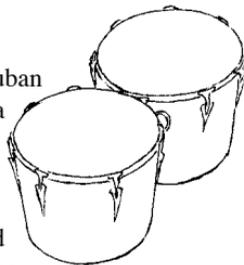
One of the oldest instruments in the world, the tambourine was already well known to the Sumerians some four thousand years before the birth of Christ. It seems also to have been in use worldwide, from the ancient Chinese to the Incas of Peru to the remote mountains of Greenland in the north, and to have changed hardly at all over six thousand years. A shallow, hand-held, one-sided



drum, with metal jingles fixed in the several apertures of the frame, it is traditionally struck, shaken, or stroked, or all three in combination. Stravinsky scored a first, however, when he ordered it to be dropped to the floor, at the moment when the puppet's neck is broken in his ballet *Petrushka* of 1911.

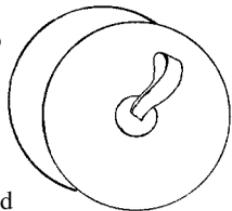
4. Bongo Drums

African and ancient in origin, the bongos became an integral part of Cuban music-making in the nineteenth and twentieth centuries, and remain a staple of Afro-Cuban music, which has now been exported worldwide. Before arriving in the orchestra of the concert hall in the 1930s, the bongos became central to Latin American popular music generally. They come in pairs, their conical or cylindrical hardwood shells being bound together, with the larger drum generally on the player's left. In some forms they can be tuned, producing two contrasting high-pitched notes, and they offer the player very considerable scope for virtuosity. Among the many composers who have incorporated bongos into their orchestral scores, Edgard Varèse, Carl Orff, Leonard Bernstein (CD 5, track 23), and Pierre Boulez are probably the best known.

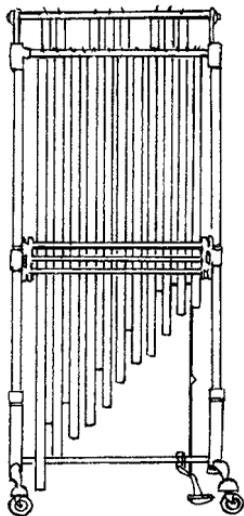


5. Cymbals

As we know from pictorial evidence, the cymbals go back at least to Assyrian times (c. 3500 BC); they and the drum have formed perhaps the longest double act in history. Generally made of bronze, they come in many sizes, though fewer shapes. A cross between an inverted dish and a copper pan lid, they range in profile from the fried-egg to the bowler hat, and when clashed together (with the exception of the 'Chinese' and 'Tibetan' cymbals) they come into contact only at their respective rims. Depending on the size of the cymbals, the thickness of the bronze, and the speed of impact, they



can produce everything from the most sonorous thunderclap to the sensuously suggestive murmur. Nor do they come only in pairs. A single cymbal, hand-held or suspended, can be played with a variety of ‘beaters’, from the thin metal rod, to the heavily padded drumstick, to the lightest wire-whisk. When the cymbals are clashed – a glancing movement rather than a head-on collision – such is the length of the resonance that the player will often have to ‘damp’ the continuing vibrations so as to avoid an overspill of sound into the next beat. When maximum resonance is required, on the other hand, the player will often raise the cymbals in the air, thus adding visual drama to the desired tonal effect.

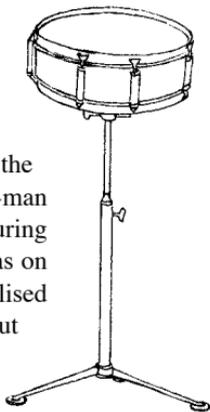


6. Tubular Bells

The term refers to a rank of bronze or steel tubes, generally eighteen of them, suspended from a metal frame and tuned chromatically. Normally used to simulate the sound of church bells (as in Tchaikovsky's *1812 Overture*, Mussorgsky's *Boris Godunov*, Mahler's Second Symphony, the finale of Sibelius's Fifth, and many operas) the chimes, as they are also called, have often been used to purely musical effect as well (CD 5, track 48). The orchestral use of bells, or bell effects, dates from the time of Bach, and increases considerably in the nineteenth century. The first use specifically of tubular bells took place in Coventry, England, in 1886 (at the premiere of Sir Arthur Sullivan's *Golden Legend*), and a keyboard-operated version was in use at the Opéra national de Paris-Bastille from 1890.

7. Side Drum

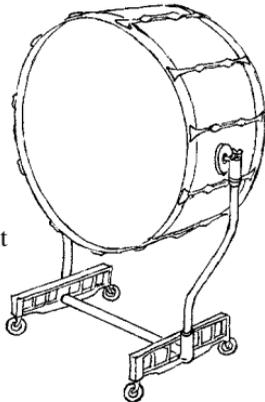
The side drum originated in the fourteenth century and throughout its career has had military associations. In the first few centuries of its development it seems to have foreshadowed *Alice's Adventures in Wonderland* by continually changing its size. It began as a small drum suspended from a shoulder strap, thus enabling the marching player to bang the drum on one side while playing the recorder on the other (a modest one-man band); but by the sixteenth century it had grown enormously, now measuring roughly two feet wide and two and a half feet deep. By the eighteenth it was on its way down again, and by the onset of the nineteenth it seems to have stabilised at roughly the dimensions it has today: fourteen or so inches wide, but varying in depth from three all the way up to fifteen inches. Of its two heads, only the upper one is struck, the lower one (crossed by 'snares' resembling violin strings) being used as a dry and raspy resonating surface, the snares activated by the vibrations of the drum beat above. The beaters are two hardwood sticks (often hickory) and the sound produced is also hard. The essence of side-drumming is the 'roll', and the variety of 'rudiments' confronting the drummer include such delightfully named manoeuvres as the 'paradiddle', 'flam', 'drag', and 'ruff', and ultimate mastery of the rolls depends on a system of recurring double-beats known as 'Mammy-Daddy'. In addition to its military and orchestral use the side drum is a staple of the folk tradition over much of Europe. Two of its most memorable orchestral appearances are in music by Rossini and Nielsen (CD 5, tracks 6 and 7).



8. Bass Drum

The ancestry of the deeply resonant bass drum stretches back to Sumerian times but it wasn't until the eighteenth century that it entered the standard European orchestra, and then it was due largely to a curious spasm of Turkomania that seems to have seized much of western Europe. Thus we find Haydn, Gluck, Mozart, and Beethoven all writing 'Turkish' music at one time or another, virtually all of it military in character. Like the side drum it soon grew in size and volume, and was generally played, for many years, with sturdy, leather-padded beaters. Today these have been replaced by substantial felt-headed sticks, heavy enough to extract the maximum possible tone from this imposing instrument.

Subtler and longer than the big bang for which the drum is mainly known is the tremolo or roll, consisting, as with the side drum and timpani, of a rapid alternation of single beats from hand to hand. For this, lighter sticks, like those used for the timpani, produce the best result. As with any drum, a great variety of tones can be produced through the use of different types of stick, including those with heads of hard felt or pure wood. Likewise, a considerable variety of effects can be created by striking different parts of the drum head – the very centre, surprisingly, producing the least resonance. Occasionally, when the illusion of a single sustained tone is desired, a double-headed beater is used.

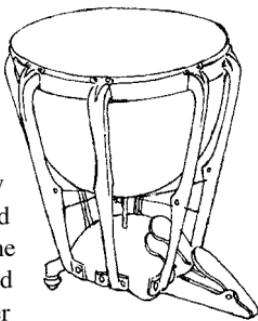


9. Kettledrums (Timpani)

As a Babylonian plaque from c. 700 BC makes plain, the kettledrum is an instrument of antiquity. There is enough similar pictorial evidence to suggest that it was already widely known in the sixth century BC and may have originated in Egypt. By the first century AD it was in use by the Persians as a war drum, but it was only during the thirteenth century Crusades that it found its way into Europe, where it continued to be used for martial purposes. Its dissemination was surprisingly slow, but by the sixteenth century it was in use by several English cavalry regiments and caught the attention of Henry VIII, who promptly imported a number from Vienna for use on horseback – these obviously being smaller than their orchestral descendants in the following century. Being tunable to a range of specific pitches, they had long since ceased to be used individually and now came only in pairs. In England and Germany particularly, they became an indispensable feature of royal ceremonies, where they served to ‘accompany’ serried ranks of trumpets (generally twelve trumpets to one pair of drums), thus forming a musical alliance which has continued to this day. ‘Trumpets and Drums’ meant trumpets and timpani (as the kettledrums came to be known). And as Handel and Bach made plain in the earlier half of the eighteenth century, they were even better suited to the glorification of God than to the glorification of war (CD 4, track 20). ‘Trumpets and Drums’ became a byword for joy of the most exalted kind, expressed in terms of incomparable ceremonial.

As with the side drum, the central principle of timpani technique is the alternation of single beats, hand to hand; and as with all drums (though more here than with most) a notable variety of tone colours can be produced by striking different parts of the drum head – the very centre, surprisingly, being the least resonant.

There are various devices for tuning and retuning, not only within a single movement but within the resonance of a single beat – an effect often exploited by Bartók, most evidently in his *Music for Strings, Percussion and Celeste* (CD 5, track 32) and the *Sonata for Two Pianos and*

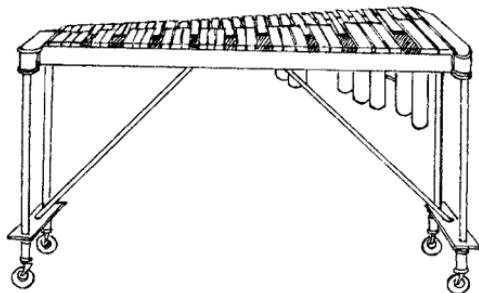


Percussion. Among these tuning devices are pedal-operated ‘machine’ drums.

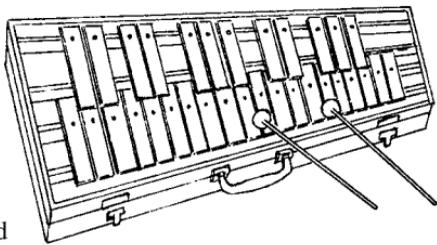
The uses of timpani are now so many and so various that every player is likely to have a collection of different types of drumstick, possibly as many as eighteen or twenty pairs: some hard, some soft, some fat, some thin, some light, some heavy, and so on.

10. Xylophone Family

Xylophone. This is a percussion instrument comprising a series of tuned hardwood bars, generally graduated from the lowest to the highest (left to right) and struck with a variety of sticks. The longer the bar, the deeper the pitch. Some form of xylophone is found in most African cultures, but nowhere is it more sophisticated and refined than in the gamelan orchestras of Java and Bali in south-east Asia, where the ‘bars’ comprise various wooden chimes, bronze slabs, bamboo pipes, metal discs, and gongs. First developed during the fourteenth century, xylophones became known in Europe as early as 1511 AD and in their present, western form are tuned and laid out following the model of the piano keyboard, with each bar suspended over a tubular resonating chamber. As shown in pictorial evidence, double-mallets in both hands were being used in Indonesia as early as 1350. Although known to European musicians in the sixteenth century it wasn’t until the middle of the nineteenth that the instrument first appeared in a western orchestra. Only an occasional visitor in the beginning, it first reached a wide audience in the last quarter of that century through its use by Saint-Saëns in *Danse macabre* (1874) and *The Carnival of the Animals* (1886) (CD 5, track 36). In the twentieth century xylophone technique reached hitherto unimagined sophistication and complexity thanks to music by such disparate composers as Mahler, Debussy, Elgar, Ravel, Strauss, Stravinsky, Tippett, Messiaen, Boulez, and Henze, to name only a few.



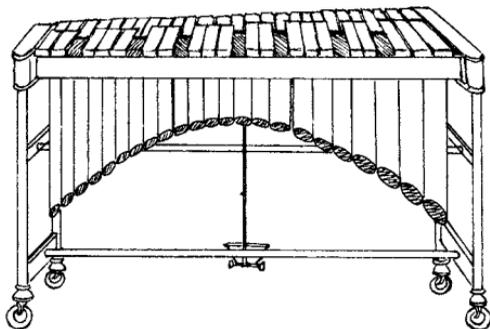
Glockenspiel. This is essentially the same as the xylophone, but uses metal instead of wooden bars. Although originating in Indonesia more than a thousand years ago, the glockenspiel as we know it today seems not to have entered orchestral thinking in the West until the last third of the eighteenth century. It exists in two forms, of which the standard mallet-played version is generally preferred by percussionists. The



alternative is keyboard-operated, on the same basic principle as the celeste, and a number of works specifically require it: Ravel's *Ma Mère l'oye* (Mother Goose), Mahler's Seventh Symphony, Dukas's *L'Apprenti sorcier* (The Sorcerer's Apprentice), Messiaen's *Turangalila Symphony*, and, last but not first, Mozart's *Die Zauberflöte* (The Magic Flute) – though here a celeste is often used instead. For some reason, chords (using more than one or two beaters) and glissandi (the swooshing of beaters up or down the bars, or both) are hardly ever written for the glockenspiel, whereas they are almost a commonplace on the xylophone or vibraphone.

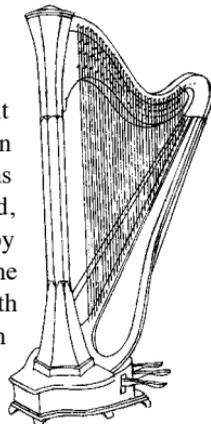
Marimba. Originally a kind of bass xylophone with gourd (specifically calabash) resonators, this off-shoot of the slave trade, deriving from West Africa, traditionally uses a softer wood and bars of a slightly but significantly different shape, thus producing a gentler and warmer tone. Still mostly associated with Latin American popular music, and to a lesser extent jazz, it has been used in the orchestra by a number of composers, among them Percy Grainger, Carl Orff, and Olivier Messiaen.

Vibraphone. Often referred to as ‘the vibes’, this instrument was developed in the USA in the second decade of the twentieth century and is in effect an electrically assisted marimba, in which the notes are given an extra though discreet throb (or ‘vibrato’ – hence the name). A frequent participant in jazz and dance bands, its use in symphony orchestras is more widespread than many people, including musicians, tend to realise. Examples, few of them remotely jazzy, include music by Alban Berg (the earliest by a concert hall composer), Milhaud, Vaughan Williams, Walton, Britten, and Boulez. Some composers use vibraphones while specifically requiring that the current should be turned off. It sounds perverse, but there is a subtle but distinct difference between a switched-off vibraphone and an orchestral marimba.



11. Harp

The harp is among the oldest instruments in the world. In Mesopotamia it was being played more than 3,000 years before Christ, as it was in Babylonia and ancient Egypt. For longer than we can calculate it has belonged both to art music and the folk tradition in many parts of the world, yet as far as can be known it was a very late arrival in Europe, and then by some strangely circuitous route. The earliest evidence that we have of the harp is from around 800 AD, in Ireland. And it wasn't until the twelfth century that it made the crossing to the Continent, where it was much welcomed by the medieval troubadours, trouvères, and minnesingers



(Naxos 8.554257). By the seventeenth century it had grown sophisticated, acquiring hook-like gadgets with which the strings could be shortened to produce notes otherwise unavailable. In the eighteenth century these were replaced by pedals, with which the tuning could be altered. The harp made its earliest orchestral appearances in the very first Italian operas, such as Monteverdi's *L'Orfeo* in 1607; it then seemed to disappear, not returning until the days of Handel and Gluck, both of whom used it, if sparingly. Mozart wrote a concerto for flute and harp which has been one of his most popular works ever since, but at no time during the Classical period did the instrument find a regular place in the orchestra. Beethoven used it in *The Creatures of Prometheus*, but it was the great nineteenth-century Romantics who installed it as a more or less permanent fixture: Berlioz, who scored for two harps, Liszt, Tchaikovsky, and Wagner, who used six of them in the *Ring* cycle. In the twentieth century Debussy and Ravel revelled in the harp's sonorities, but they, too, used it very selectively in their orchestral music as a whole. In many works the harp is deliberately embedded in the overall musical texture, sometimes so subtly that the untrained ear may miss it altogether. But the orchestra without it would be a poorer place. (For more detailed information on the development of the modern harp, see 'The Greatest Instrument Makers': Erard, p. 98.)

3. The Greatest Instrument Makers

1. Antonio Stradivari and Giuseppe Guarneri ('del Gesù')

The most famous and possibly the greatest-ever instrument maker was Antonio Stradivari. He was born, as far as can be told, in 1644, in Cremona, Italy, and worked there until his death ninety-three years later (a colossal age for the time). As he reputedly spent most of his waking hours at his work bench, the outlines of his life are simply told, and of little interest. He was married twice, widowed once, and he fathered eleven children, two of whom followed him into the business. No pictures of him survive, or long survived his lifetime; all we know of his appearance, based on the testimony of his contemporaries, is that he was tall and thin, wore a white woollen cap in the winter and a white cotton one in the summer, and habitually wore over his clothes a white leather apron. In a lifetime of unflagging industry he was seldom seen in any other state, except after hours by his immediate family.

Stradivari made well over 1100 instruments – violins, violas, cellos, viols, even a guitar – of which roughly 650 survive. The number of forgeries bearing his name reaches into the hundreds of thousands, many of them factory products dating from the nineteenth century. Even if his instruments were mute they would (or should) remain priceless works of art. In design, in the staggering finesse of their craftsmanship, in the balance of their proportion, in the rich autumnal gold of their colouring, they haunt the mind with their sheer beauty. That they remain the ideal

for the top string players of our era, centuries after they were made, is almost incidental. Each is unique, each has its own particular properties and characteristics; yet some things are common to them all. In the words of Charles Beare, one of the most knowledgeable and admired dealers in the world,

In their tone there is incredible richness and ease of response, with ample reserves of power. They have an extraordinary quality of sound that carries through a hall even when played *pianissimo*, and have an immediate response and swelling power. The sound projects forward from the instrument in such a way that the player is at first not aware of the volume he can produce.

Many theories have been advanced and all manner of scientific tests have been carried out in a thus-far vain attempt to discover the secret of these miraculous creations. They have been studied and copied in every detail, the varnish has been subjected to the most minute analysis, the woods used have been tirelessly scrutinised. Nor can there be any question of some mystical power at work, because the same tests on comparably great instruments by Stradivari's predecessors, competitors, and successors have proved equally barren. But then so have all attempts to explain genius. Perhaps our energies would better be spent elsewhere.

Only one other figure in the long and glorious history of violin making (and, by extension, viola and cello making as well) is felt by the majority of string-players to have seriously rivalled Stradivari's achievements. For some, he excelled them. In striking contrast to Stradivari, Giuseppe Guarneri – known as 'del Gesù' to distinguish him from his father, another very great violin maker, who had inherited the mantle of his own father Andrea Guarneri (1626–1698) – lived only to the age of forty-six. Alone among his prodigious family, he had a certain rebellious streak and deviated from the practices and style of his father and grandfather. At the age of twenty-five he did the unthinkable and left the family business to set up on his own. Unlike his elders, who had chosen to ignore their formidable rival, Giuseppe 'del Gesù' took a keen interest

in everything Stradivari did, not with a view to copying it, but to learn from it and use what he learned towards the achievement of his own ideal: an instrument which would combine the tonal beauty and magical responsiveness of Stradivari's with a strength and power which could resist, and indeed reward, the strongest pressure of the bow, producing an unsurpassed grandeur and projection of sound. Through the particular use of his tools, his incomparable varnish (all violin makers made their own), and the abandon of his vision and imagination, he produced instruments of extraordinary individuality and with a kind of wild beauty all their own. Like Stradivari, he took his secrets to the grave and his instruments retain their mystery to this day.

2. Theobald Boehm

Few men start out in life so well prepared for their destiny as Theobald Boehm. Born in Munich, Germany in 1794, he was the son of a goldsmith, whose craft he picked up early in life. He had a keen mind, a love of learning, the instincts of a self-made man and a pronounced gift for music. As a child he taught himself to play the now obsolete flageolet, a kind of cousin of the recorder, and the one-keyed flute. By the time he reached his middle teens he felt he had got from the latter everything it had to offer him, and at the age of sixteen he made himself a copy of a four-keyed flute by the distinguished Dresden instrument maker Johann Grenser. Here again he taught himself, but was overheard by the noted flautist Johann Nepomuk Capeller who offered to give him formal lessons. Within two years his teacher had to admit that the boy had no more to learn from him, and in 1812 was both proud and happy to see him appointed flautist at the Isartor Theatre, where for five years he moonlighted in the evenings after finishing his day job as a goldsmith. A court appointment in 1818 persuaded him to devote all his time to musical activities, and ten years later he had established a profitable factory and was manufacturing flutes professionally. He had likewise matured as a flautist and from 1830 he was able periodically to leave the factory in the capable hands of his foreman and partner, and undertake the life of the travelling virtuoso, which he pursued with great success.

In 1831 he travelled to London for the first time, an event that marked the great turning point

of his life. In the playing of England's favourite flautist Charles Nicholson he encountered a power and richness of tone such as he had never heard, and resolved to match it. Part of Nicholson's secret, however, was an exceptionally large-holed flute. It was clear at once to Boehm that the flutes he had known up till then were inadequate to the instrument's true potential. He boldly decided to go back to basics and rethink the very principles on which flutes had been built for generations. Within a year of his return to Germany his factory produced the prototype which was to revolutionise the manufacture, design, and technique not only of the flute, but by extension and variation of other wind instruments as well, most notably the clarinet.

The details are too technical for the average lay person to take in on first telling, but Boehm's new design rested on two main pillars. One concerned the shape and size of the bore, the hollow inside of the pipe, as it were. The other was the principle of the so-called 'ring keys'. The prototype of 1832 had a tapered bore – like the mould of an elegant dinner candle – which was notably larger than the traditional version. The ring keys are rather harder to explain. The most significant distinction between the vertical flute (the recorder) and the 'transverse' flute is not that one is held horizontally and the other isn't. It's the fact that the recorder is open-ended and the transverse flute is stopped, as with a cork. One of Boehm's objectives was to secure for every played note the nearest possible equivalent of the recorder's 'open end'. The goal was to leave enough holes open to give the effect of an 'open end' for every note played. By encircling the finger holes with metal rings connected to other keyholes, Boehm enabled the finger, in one and the same motion, to close the hole beneath it while opening another, elsewhere on the pipe. This prototype has thus been known ever since as the 'cone Boehm' or the 'ring Boehm'. But the revolution had only begun. Further experimentation resulted in a re-siting of the holes, according to sound acoustic principles, thus requiring an entirely new system of fingering. Like many revolutions, particularly those which threaten traditional livelihoods, the Boehm system, despite its manifest advantages, was slow to win widespread acceptance. Today it is virtually universal. But Boehm himself remained dissatisfied. For two years he devoted himself to an intensive study of acoustics, producing at the end of it his first cylindrical flute with a 'parabolic' (i.e. tapered)

head. He died in 1881, at the age of eighty-seven, remembered by the great majority of those who knew him as a gentle, amicable man of generous instincts and unimpeachable integrity – though this didn't save him from charges of theft and malpractice by some of his competitors (charges which have subsequently been proved groundless). He left behind seven sons and a daughter, all of whom apparently lived happy and eminently successful professional lives.

3. Adolphe Sax

Adolphe Sax was born the son of a prominent Belgian wind instrument maker in 1814. He grew up surrounded by instruments 'in progress' and soon learned how to finish them off himself. In addition to having inherited his father's flair for handiwork he had obvious musical talent. By the time he entered the Brussels Conservatory he was already a more-than-competent flautist and clarinetist, and his natural inventiveness bordered on the irrepressible. Humility was not his strong suit, however, and his self-esteem seemed to be in permanent overdrive. Everything came easily to him, including making enemies, though he stopped short of writing to his mother, as the great pianist and conductor Hans von Bülow had written to his while a student: 'My unpopularity here is unbounded, and I rejoice in it!' For a conductor such an attitude may not have been a liability, but it ill-behoved an incipient businessman, which Sax, for all his talent, was. As an instrumental innovator, on the other hand, he was blessed with a combination of fluency and energy given to few. At the age of sixteen he exhibited his wares at the Brussels Industrial Exhibition of 1830, and while still some way short of his twenty-first birthday he played and exhibited a new flute boasting fully twenty-four keys. Three years later he had patented a bass clarinet which left all previous models in the shade, and was already at work on a completely new instrument which would make his name immortal: the saxophone, indeed a whole family of them. His services were now being sought from abroad, and in 1842, still only twenty-eight, he turned down generous offers from both London and St Petersburg, moving instead to Paris. Contemptuous though he could be of his lessers, he knew very well on which side his bread was buttered, and in short order had befriended such movers and shakers as Berlioz, Rossini,

Meyerbeer, and the polymath theorist, composer, historian, critic, and chronic debtor François-Joseph Fétis. He set up shop and began manufacturing superb examples of standard instruments before incorporating improvements of his own and inventing a number of new instruments almost all of which he named after himself: the saxophone, of course; a whole family of saxhorns (used mostly in brass bands); another of saxotrombas, a battery of improvements to the clarinet, the bassoon, and the trombone; plus an entirely new system of valves for brass instruments generally. He then formed his own band to demonstrate them, before joining the faculty of the Paris Conservatoire to instruct others in the mastery of his own instruments. By the time he reached the age of thirty-two he had a virtual monopoly on all music and instruments for the military. By this time he had earned the unconcealed enmity of the native French instrument makers, who lost no opportunity to put obstacles in his path. Nor did he make friends by openly purloining other men's ideas, putting an original gloss on them, and then claiming them as his own. A tragic victim of his own conceit, he spent much of his later life embroiled in law suits which eventually bankrupted him, twice over. He died a largely broken and disappointed man in 1894, without a glimmer of the runaway success his saxophones would score in jazz and popular music throughout the century to follow. To this day, however, they remain on the periphery of the symphony orchestra.

4. Sébastien Erard

Born in Strasbourg in 1752, four years before Mozart, when the piano was still in its relative infancy and the dominance of the harpsichord still secure, Erard was perhaps the most important single figure in the transformation of the 'classical' *fortepiano* into the 'romantic' *pianoforte* (as the piano is still known in some of the stuffiest corners of the musical world – albeit the *very* stuffiest, of which England can still boast a few). When he died, his pianos were the favourite of Chopin. It was his transformation of the orchestral harp, however, that put him in the class of the great violin makers of Cremona, most notably Stradivari and the Guarneris. Like so many of the finest instrument makers, he was born into the long tradition of cabinet making. His father, a

master of the craft, died when Sébastien was only sixteen. Left largely to his own devices the boy then made his way to Paris, where he became apprenticed to a harpsichord maker – only to be dismissed for ‘undue inquisitiveness’. Under another, he further honed his skills as a craftsman and developed exceptional ingenuity in matters of practical design, inventing a mechanical harpsichord which attracted widespread notice. The vastly wealthy Duchesse de Villeroi was especially impressed and intrigued, and established a beautifully equipped workshop for him in her private château, where in 1777 he made the first piano ever built in France. Based on English and German models, it was a ‘square’ piano with a range of five octaves. Prior to this, however, at the request of the harp virtuoso and composer Jean-Baptiste Krumpholtz (Naxos 8.553622), he had turned his attention to the deficiencies of the ‘single-action’ pedal harp. These included chronically unstable pitch, frequent string breakages, slippery intonation, and its inadequate ability to change from one key to another. These challenges preoccupied Erard for some years before he answered to all but one of them in his revolutionary single-action harp of 1794. But this is to anticipate.

Within only a little time of his establishment in the Duchess’s workshop Erard had outgrown it and set up an independent business with his brother in the fashionable Rue de Bourbon. Their success aroused the fears and excited the jealousy of the established guild of Parisian instrument makers, who contrived by some legal chicanery to seize the Erards’ workshop. To their surprise and consternation Louis XVI, no less, stepped into the breach, conferring on Sébastien a special dispensation allowing him to make pianos independently of the guild. In 1786 Erard opened a branch in London, where he took out his first patent for improvements not only to pianos but to harps. The firm’s patronage flourished on both sides of the English Channel, its clients including such diverse luminaries as Marie Antoinette, Napoleon Bonaparte, and King George IV of England.

Where the piano is concerned, his most significant invention, one of the greatest landmarks in pianistic history, was the ‘double escapement’ action, allowing the rapid repetition of notes. The one remaining deficiency of the harp, its limited capacity to move freely between keys, was

finally overcome in 1811 after thirty years of experimentation. And with that, the evolution of the concert harp was virtually complete. With only minor modification the Erard harp of 1811 has remained the norm to this day.

Among Erard's more exotic inventions are the *piano-organisé* (a combination of piano and organ), the *harpe à fourchette*, and the *orgue expressif*. He died in 1831.

4. Instrumental Typecasting

Instruments, no less than actors, have traditionally been the victims of prejudiced and prejudicial type-casting. Below is a list of some commonest, with the addition of correctives or extensions (in italics) where appropriate.

Violin. Romantic, lyrical, sensuous, seductive, virtuosic, versatile (CD 1, tracks 6, 10, 18 & 20) – but also, in the seventeenth century and earlier, devilish, vulgar, and frivolous

Viola. Warm, autumnal, melancholy, nostalgic. *Yes, but see* CD 2, tracks 7 & 8

Cello. Emotional, noble, nostalgic, yearning. *Just so. But also virtuosic and brilliant, tough, sensual, and uncompromising* (CD 2, tracks 24, 28 & 30)

Double-bass. Ponderous, ungainly, caricaturish, clownish. *But also eloquent, intense, nimble, formidable, frightening* (CD 2, tracks 38, 40, 42 & 43)

Flute. Pure, open, pastoral, serene, otherworldly, neutral, bland, agile. *But also sensual, exotic, insolent* (CD 3, tracks 2, 14 & 16)

Oboe. Expressive, poignant, plaintive, tender, intense, lyrical, exotic, ‘nasal’

Clarinet. Darkly lyrical, richly coloured, agile, wide-ranging, harmonious. *But also raucous, squeaky, shrill, plaintive, playful, jazzy* (CD 3, tracks 31–3)

- Bassoon.** Harmonious, more functional than expressive, a natural comedian, an oboe with a cold. *But also desolate, lonely, eerie, eloquent* (CD 3, tracks 62 & 64)
- Trumpet.** Brilliant, ceremonial, military, virtuosic, public, powerful, penetrating, thrillingly strident, commanding. *But also lonely, swaggering, intimate, romantic, wheedling, exalted* (CD 4, tracks 10–12, 14–16, 18 & 20)
- Trombone.** Blaring, powerful, rather dark, even sinister in character, ceremonial, epic, intimidating. *But also humorous, satirical, jazzy, rude, exalted, smooth* (CD 4, tracks 27, 34 & 36)
- French Horn.** Outdoorsy, suggestive of the hunt, alternately velvety and brassily blaring, noble, melancholy. *But also grandiose, exalted, eloquent, and thrilling* (CD 4, tracks 47 & 49)
- Tuba.** Functional, oom-pah-pah accompanist, ‘tubby’, clownish. *But also capable of a kind of lugubrious poetry* (CD 4, track 53)

5. *The Art of Orchestration and Transcription*

A survey of the many ingenious ways in which composers have sought to capture or even enhance the particular sonority of the original.

Most orchestrations are of keyboard works.

And most pianists admit, in many cases, to orchestrating keyboard works in their mind. Is there, perhaps, something intrinsically inadequate about the piano? No less a figure than Alfred Brendel has stated that he can think of only one great piano composer who has not regarded the instrument as a surrogate for something else, be it an orchestra, a string quartet, a brass band, a vocal ensemble, an organ, whatever. The one exception, for Brendel, as for many musicians, is Chopin – the only purely pianistic composer in history. Interestingly, every attempt at orchestrating Chopin’s music has served only to diminish rather than enhance it. ‘Chopin is the greatest of us all,’ said Debussy, ‘because he discovered everything through the piano alone.’ He was also the first real magician of the sustaining pedal (often wrongly known as the ‘loud’ pedal). Widely described as ‘the soul of the piano’, it remains the only feature of the instrument for which no-one has ever found a successful orchestral equivalent.

What constitutes good (and inferior) orchestration?

As with most things, notions of good and bad (as opposed to good and evil) regularly change with the times. Berlioz, Wagner, Rimsky-Korsakov, Debussy, Schoenberg, Ravel, and Respighi, all of them celebrated throughout the twentieth century as positive geniuses of orchestration, would have been regarded with horror in the time of Bach and Handel. On the other hand, Schumann, Chopin, and Brahms were widely derided as incompetent orchestrators in their own time, as they have been since. Surely there must be some common denominator? Broadly speaking, from an historical point of view, good orchestration must achieve one of two things – or both, depending on the desired end. These are clarity of texture (one must be able to hear everything); and what’s sometimes given as a definition of style, in any sphere: fitness for function, i.e. is the instrumentation appropriate to the nature of the music? Are bongos, vibraphones, and tambourines, however effectively combined, suitable for a Requiem Mass at the Basilica of St Peter in the Vatican City? Are tubas, lutes, and a consort of viols likely to unleash exuberant passions at a Las Vegas discotheque (or anywhere else)? In fact that last combination is a loser on all counts, because the tuba will drown out all the others. Hector Berlioz made a similar complaint about his friend Chopin’s far more appropriate scoring in his F minor Piano Concerto:

When they [the orchestral instruments] play *tutti* [i.e. all together], they cannot be heard, and one is tempted to say to them: why don’t you *play*, for heaven’s sake! And when they accompany the piano, they only interfere with it, so that the listener wants to cry out to them: be quiet, you bunglers, you are in the way!

And there we have at least the beginnings of an answer to our question. In good orchestration, no instrument or group of instruments should be allowed to ‘get in the way’ of any other. Particularly vexing for pianists is when the composer in a concerto writes highly virtuosic, or just plain difficult passages for the soloist, and then allows the orchestra to drown them out. Two

notably ironic cases spring to mind. Rachmaninov does exactly this in the first movement (indeed the first, wonderful theme) of his most popular concerto, No. 2 in C minor. And why ironic? Because he was not only a very good orchestral composer but a quite phenomenal pianist. And Brahms, the great symphonist (and at his best a great pianist, too) does exactly the same sort of thing in the finale of *his* Second Piano Concerto. So expertise is no guarantee of common sense, even in the loftiest minds. And, to a certain extent, common sense is one of the first principles of good orchestration.

But there are times when the question ‘Can it be heard?’ is inappropriate. One of the wonders of the orchestral palette is that you can mix different instrumental colours and produce new, absolutely unique sonorities which sound, in effect, like a single, new instrument. When painters mix red and blue to make purple, it’s inappropriate and irrelevant to ask of the red (or the blue), ‘Can it be seen?’ The whole point is that it shouldn’t be seen. *Cannot* be. From that point of view (if from that point only) there might be something to be said for the tuba-lute-violos after all – at least in principle. The trouble with the orchestration of Schumann, another great composer, is that he’ll often use octave or unison doublings, which do nothing but weigh down the texture. In effect he’s mixing purple with purple, or maybe purple with brown. Schumann’s orchestration is hamstrung by his own insecurity and relative lack of first-hand orchestral experience. Thus he shrinks from giving any instrument a solo, and compounds the error by doubling themes on several instruments at once, apparently on the theory that even if several musicians fail to show up or mistakenly miss their entry his theme will still be heard. Nor in many cases will he take advantage of a repetition by varying the scoring in any way. And what he does in melodies, so he frequently does with inner parts and with the bass line. In the first movement of his Third Symphony, for instance, the cellos are yoked together with the double-basses for the whole of the first 164 bars. In the Third and Fourth Symphonies, almost every theme is given to the violins, who then also play a prominent part in developmental and transitional passages. But as all of this applies mostly to his later works, the possibility arises that it was the result of his deteriorating mental condition (he died in a mental asylum, at the age of forty-six).

Interestingly, Gustav Mahler – a superlative conductor as well as composer, and a passionate admirer of Schumann’s music – re-orchestrated large swathes of all Schumann’s symphonies. To make the texture more transparent and buoyant all he really needed to do was to delete and delete and delete, which is precisely what he did.

Mahler’s orchestration in his own colossal symphonies is both brilliant and paradoxical. Although he scored for the biggest orchestras ever assembled (or almost), the principles and procedures of chamber music are frequently to the fore. Since he often uses whole sections as individual ‘instruments’ in their own right, the symphonies are often, at one level or another, gigantic quartets, quintets, and so on. But it takes a lot of listening experience to be able to hear them in this way, especially in view of their extreme length.

* * * * *

If music can suffer, as in Schumann, from too little orchestration, it can also suffer from too much, from an excess of colour. It’s a common feature of a lot of Russian music, even from such orchestral geniuses as Prokofiev and Shostakovich, that an apparent obsession with instrumental variety may threaten the integrity of the music itself. When every bar, as often happens, brings a change of instrumental colour it can actively disintegrate the organic coherence of the longer line (and of *this*, Rachmaninov is never guilty). If we stand too close to a mosaic we see only separate tiles, or in a pointillistic painting, such as Seurat’s, separate dots of colour. Only when we stand back will they merge to form a single, larger image, with both clear outlines and delicate shadings. Since music is of time not space, we haven’t the same options. To a certain extent it’s up to the composer to determine our perspective, and, in this, orchestration plays a major part.

Similarly, orchestration can enhance our awareness of musical structure. An obvious example is the identity of specific instrumental groupings with particular themes. The varied instrumentation of themes can also help in defining their character to a degree far beyond the capacities of the piano. Thus many pianists ‘orchestrate’ themes in their heads – not because a

piano can be made to sound like an oboe or a trombone or a violin, which it manifestly can't, but because the imagined instrumentation creates the right psychological and spiritual frame of mind in which to capture and project the right mood or purpose.

Traditionally, instrumentation has been seen as an adjunct to the music itself: first the line drawing, then the colouring in. It has been handmaiden to melody, harmony, rhythm, form. It is against these, and in terms of these, that the quality of orchestration has mostly been measured. But with the progressive undermining of tonality, that sense of key, which still underlies most of the music we hear today (and which has been the very basis of melody and harmony, themselves indissoluble), the roles were occasionally almost reversed. As long ago as 1899 Debussy composed a work (*Nuages* – Clouds) from which any sense of directed melody, or harmony, or rhythm, has been entirely excluded. Texture and tone colour have become the principal, almost the only agents of atmosphere and image. Ten years after *Nuages* Arnold Schoenberg formulated the idea of what he called 'tone-colour melody', in which melodic, harmonic, and rhythmic cohesion are basically eliminated, and the sole agent of continuity is the shifting blend of instrumental colours.

Why are some instrumental combinations better than others? What constitutes instrumental compatibility?

Many improbable combinations work surprisingly well. Vaughan Williams, for instance, wrote ten songs for voice and oboe, and nine for voice and violin, and he brings it off. Ultimately, like so much else, it mostly boils down to personal taste. But there are practical objections which transcend subjective judgements. A concerto for clavichord and brass would have a rough time of it; inaudible soloists pose insurmountable challenges to a conductor. But one needn't resort to extremes. Cello concertos with a large orchestra have to be very carefully crafted, since the cello lacks the brilliancy and power of projection which have made the violin concerto, and the piano concerto, such popular institutions. Instruments with a lowish register and a thickish sort of sonority, like the horn, the bassoon, and the double-bass, make an unpromising ensemble owing

to their tendency to congeal into a glutinous mass. On the other hand, there are times when a glutinous mass is exactly what's called for. So much depends on context. At the opposite extreme, an excess of brightness and dazzle soon palls. Contrast is the life-blood of music, but when, what, and how much are among the greatest challenges to the composer – whatever the period, whatever the medium.

6. *The 'Original Instrument' Debate*

What have been the causes of instrumental evolution and why, in most cases, did it largely come to an end in the twentieth century?

A complicated, chicken-and-egg question, to which there are no hard and fast answers. In some cases the spur has been the dissatisfaction of players with the limitations of their instruments (interestingly, most of the major instrument makers have been very capable performers). In others, composers have forced the pace of evolution by writing beyond the capacities of existing instruments. There's a famous story about the time a first-class violinist and quartet-leader complained to Beethoven that a particular passage in his latest quartet was simply not possible (Beethoven, it should be added, was himself a violinist of professional level). 'Fiddle be damned!', he bellowed. 'What do I care for your miserable instrument when the spirit moves me?!' As with Olympic athletes, a way was found. Franz Liszt forced the pace of evolution where the piano was concerned. His unspoken message to piano makers was, in effect, 'Adjust or die!' A critic has left us an interesting account of a recital by Liszt:

After a concert, Liszt stands there like a victor on the battlefield, like a hero at a tournament. Daunted pianos lie around him; torn strings wave like flags of truce; frightened instruments flee into distant corners; the listeners look at each other as after a cataclysm of nature that has just passed by, as after a storm out of a clear sky, as after thunder and lightning, mingled with a rain of flowers and a snow of petals and a shimmering rainbow; and he stands there, leaning melancholically on his chair, smiling strangely, like an exclamation point, after the outbreak of general admiration.

Comfortably within Liszt's lifetime, iron-framed, steel-strung pianos were designed which could withstand anything he or anyone else could throw at them. The lightweight, wooden-framed *fortepianos* which had sufficed for Mozart and Haydn effectively became extinct, not to be revived until well into the twentieth century.

But composers don't exist in a vacuum. They are children of their times, and in one way or another their music reflects the cultural values of society at large. In music, particularly, the nineteenth century was the great epoch of Romanticism, with all the Romantics' love of brilliance and extravagance. Orchestras swelled to gargantuan proportions, composers required both unprecedented volume and a range of instrumental colours beyond the dreams of their Classical forebears, and sensuality assumed a central role as never before. The lean, clear, finely honed tones of eighteenth-century 'enlightenment', with its translucent stratification and formal elegance, were inadequate to the orgiastic requirements of the Romantics. Whatever their sexual appetites in life, the notion of 'erotic' music almost certainly never occurred to Bach, Mozart, or Beethoven (the ludicrous and ill-informed rumour that Beethoven's Third Symphony was originally nicknamed 'Erotica' rather than 'Eroica' is patently absurd – not because Beethoven was a prude, but because nothing in the music, from first note to last, could conceivably be construed in a sexual light). In much of Wagner's music – and to a less blatant extent in the music of Debussy, Richard Strauss, and Mahler – on the other hand, a sense of the erotic is all but inescapable. It eludes verbal elucidation, however, except in one case: there is a passage in

Wagner's opera *Tristan und Isolde* where the music depicts so explicitly what would be impermissible on the stage that the pure of heart should put their fingers in their ears until the danger is past. Less explicit, but arguably more erotic, is the famous 'Liebestod' at the end of the opera.

To imagine this scene transcribed for flute and string trio, *à la* Mozart, or for a quartet of recorders, is to understand how crucial instrumentation is to a true representation of the music. The result would be preposterous, of course. But in the view of many twentieth- and twenty-first-century advocates of the so-called 'early music' movement, the reverse used to be the norm. To them, the performance of an early Mozart symphony by an orchestra appropriate to Tchaikovsky – standard practice for many decades – is only marginally less distorting than to transcribe Ravel's *Boléro* for ocarina quintet (and there really is such an ensemble). Only by performing music as its composer would have heard it, they argue, can we truly understand his intention (and it usually was a 'him'). But, say the more moderate traditionalists, we know for a fact that the general standard of performance, certainly in the orchestras of Bach or Mozart's time, was far below what we take for granted today. Thus the composer himself seldom heard his music as he intended it. We know, for instance, from his correspondence with the Leipzig city council, that Bach was bitterly frustrated by the forces at his disposal. Similarly, later on, Beethoven's symphonies seldom had even an adequate performance during his lifetime. One rather ironic result of the huge successes scored by the early music movement is that it's only now, for the first time ever, that Beethoven's symphonies, and many other great works, are being heard as originally intended. But this in many ways is a red herring. The real point of the 'authenticists' isn't so much the standard of playing as its character, disposition, and style. Fewer players, leaner sounds, questions of tempo and phrasing, textural clarity, the types and uses of ornamentation, etc. – these are the most important issues in the study of performance practices, in whatever era. To many performers and conductors of the utmost integrity, the question of original instruments is a side issue.

We know too much history today to turn our backs on it, but it would be wrong to equate

musicological correctness with artistic truth, though the two aren't mutually incompatible. An orchestra of unsurpassed instrumentalists can give the most scrupulously stylistic and historically informed performance imaginable and still leave the heart untouched. And when you hear a performance which illuminates the soul and moves you to the very quick, does it really matter in any degree whether trills were begun from above or below, on the beat or off it? Scholarship can never be a substitute for insight. And engraved on the heart of every musician should be the words of Albert Einstein, no less: 'Imagination is more important than knowledge'.

How different do 'period' instruments sound (and why)?

It all depends, of course, on which period and which instrument, and on the attitude, imagination, and tastes of the performers (as, also, on the context in which these were formed). In the sphere of orchestral music the most striking difference is in the character of the string sound. The earliest true orchestras, as opposed to the random collection of whichever instruments happened to be handy, were of strings only; and without exception all the great composers in the first orchestral age (roughly 1650 to 1730) were violinists – and Italian violinists at that: Corelli, Stradella, Tartini, Torelli, Albinoni, Vivaldi, Geminiani. It was also the golden age of violin makers: many of the violins, violas, and cellos made by Stradivari, Amati, and Guarneri are still in use today, and prized above all others. But as we've seen, they have been substantially altered, as has the way of playing them. If Corelli were to return today and meet one of our top-flight Romantic virtuosos he might regard the experience as a nightmare. On being handed a priceless Stradivarius, Amati, or Guarneri, he would find that the original bass bar – the internal 'buttress' supporting the pressure of the bridge – had been replaced by a longer and stronger one, the neck had been lengthened, broadened, and re-angled, the fingerboard had been extended to accommodate high notes probably undreamt of by Stradivari, the bridge had been raised and reshaped in order to minimise the risk of two notes sounding together unintentionally, and the tension of the strings had been increased from sixty-three to ninety pounds, with ruinous consequences for many beautiful old instruments. He might then go on to discover that the gut

strings of his own day, or at least some of them, had been replaced by steel ones, and he would look with astonishment at the chin rest (invented by the virtuoso Louis Spohr in 1820) since in his day the violin was held nowhere near the chin, but rather at breast level. On picking up the bow, he would be further startled. Longer and heavier than the bows of his time, it has also changed its shape. The slight, convex curve of the stick (as in the original hunting bow) has long since been replaced by a concave one, no longer an arc, but a trough (albeit a very shallow one). And if, once recovered from these visual shocks, he were to pick up the instrument and begin to play, he might find the sheer volume of noise, as he would doubtless perceive it, both alarming and offensive. Returning to the time machine which had brought him here, he would probably be overjoyed that he had bought a round-trip, not a one-way ticket. What he would never have guessed is that just around the corner he could well have found a string orchestra in rehearsal, playing on *his* kind of instruments, with *his* kind of bows, in *his* sort of style. He might marvel at the players' outlandish dress, but his soul would be soothed. If he were to explore still further he would discover that the sheer range of choice confronting the present-day music lover is without precedent in the history of the world. He might still think he was dreaming, but it would no longer be a nightmare.

Back in the late 1960s and early 70s, however, there were many music lovers who weren't so sure. It has to be said that in the early years of the period-instrument revival there was a tendency amongst a number of conductors to put as much distance as possible between their own, historically informed, 'authentic' approach, and the 'corrupt', heavily romanticised, 'creamy', 'throbbing', 'sensual' string sound bequeathed to us by the nineteenth-century Romantics and once applied to music of whatever period. The result was a dramatically leaner, lighter, almost nasal sound, bordering on the musically anorexic and applied almost indiscriminately, in turn, to everything from Corelli to Mozart, if not beyond. Nor was the slimming confined to style and tone. On sound musicological grounds, orchestral numbers were vastly reduced, resulting in increased clarity of texture, with a corresponding tendency to faster tempos. The most obvious difference in sound, though, was the almost wholesale rejection by historicists of vibrato – that

audible pulsation which at its most extreme becomes a throb. And that remains the case, but with concessions on both sides: the ‘authenticists’ have significantly softened their stance, acquiring a new and welcome flexibility (much of it buttressed by the latest scholarship), and hitherto indiscriminate ‘traditionalists’ have sharpened their stylistic focus, too, with gains all round. But if the two schools have not yet, perhaps, become entirely reconciled, there has been a sufficient meeting of minds and spirit to blur the distinctions between them. The difference between Lucy van Dael, a ‘period’ player (CD 1, track 37), and the sounds produced by the Cologne Chamber Orchestra, a ‘modern’ ensemble playing according to informed historical principles (CD 2, track 14) is nothing like as large as that between, say, the Academy of Ancient Music and the St Paul Chamber Orchestra in the mid-1970s. Today, even the most sceptical listeners, where period performance is concerned, would be shocked to hear Vivaldi’s *Four Seasons* played by the full complement of strings in the New York Philharmonic, as it was in the early 1950s.

Changes in the sound of wind and brass since the days of Bach and Handel (first half of the eighteenth century) are of similar character, but some of the instruments themselves have undergone still more radical changes (see ‘The Greatest Instrument Makers’, p. 93). As players adjusted to the sequence of improvements which progressively eased their task, unfashionable techniques slipped out of currency. By the 200th anniversary of Bach’s death, in 1950, there were few trumpeters left who could cope adequately with the very high and often virtuosic parts in works like the Second ‘Brandenburg’ Concerto (the recorded performance conducted by Pablo Casals substitutes a soprano saxophone – an instrument not invented until roughly a century after Bach’s death). The situation today has changed beyond all recognition, and we are all beneficiaries.

7. *Orchestral Seating Plan*

How, why, and when was the traditional seating plan arrived at?

To the first: through trial and error. To the second: for optimum sound and efficiency of communication. To the third: still awaiting clarification.

If there can really be said to *be* a traditional plan, it's roughly as follows: the strings are spread out at the front, on either side of the conductor. Of all sections they are thus the closest to the audience. The violins, in two divisions, first and second, are to the conductor's left, the violas central, the cellos and double-basses to the conductor's right, cellos first, double-basses at the end. Percussion: centre-rear. Brass: centre-middle. Woodwind: centre-front.

It's entirely possible, however, that you could go to a symphony concert every night for a week and never see the above plan once. It depends on whom you were going to hear and where. The plan might be altered for reasons of space in the hall, or because the conductor has other ideas (not uncommon), or because the players prefer or are used to some other arrangement. Nor is there any hard-and-fast rule about the seating within each section.

Why have some conductors, past and present, chosen alternative arrangements – and with what results?

If the conductor is elderly and a product of old-world European traditions, he may want to have the first violins on his left, the second on his right, thus having an even spread of pitch, as it were, right across the front of the stage, favouring a warm homogeneity of sound once the other strings are seated. Others prefer having the highs on one side, the lows on the other. This is often the preference of pianist-conductors, which probably means the majority. Interestingly, however, the orchestral arrangement is exactly the opposite of every keyboard instrument throughout history, all of which have the lows on the left and the highs on the right.

The violins-across-the-front seating has two particular advantages, one psychological, the other musical. It gives the second violins a clear and visible sense of their own identity (from a purely musical point of view, they aren't in any way the inferiors of the firsts), and it perfectly suits the antiphonal, to-and-fro, spatially conceived exchanges which occur very often in music from the Renaissance to the present. Conductors who insist on an all-violins-on-the-left arrangement are depriving us of composers' full intentions in pieces like Rimsky-Korsakov's *Capriccio espagnol* and the slow movement of Tchaikovsky's Sixth Symphony. The downside of the left-right disposition of the violins is that it makes a perfectly controlled ensemble harder to achieve in the many cases where they are actually meant to play as one (the fact that it forces the conductor to look like a spectator at a tennis match, on the other hand, will generally appeal to the orchestra, who traditionally loathe the conductor as a point of principle). And then there are works like Brahms's *Serenade in A* and Stravinsky's *Symphony of Psalms* which dispense with the violins altogether, thus forcing a major resettlement project on the stage.

International differences where seating is concerned, as indeed in so many spheres of life, are growing more infrequent by the day. But right through the twentieth century there were traditional differences separating English-speaking countries from most of the rest of the world. One of these was the placement of the horns, which in the Anglo-American tradition have been

separated from the rest of the brass, largely in acknowledgement of their double identity (woodwind and brass). In continental Europe, and increasingly throughout the world, the horns have been seated with the rest of the brass on the conductor's right. Not only does this visibly estrange them from the woodwind, it runs the risk of dulling the sound, since the 'bells' of the horns are no longer directed at the audience. One compromise move has been to place the horns centrally, behind the woodwind. But the placement every horn player fears the most is immediately in front of the timpani and heavy percussion, since the reverberation from the kitchen brigade inevitably passes up through the bell of the horn, ending on the lips of the player, which is not only physically unpleasant but a liability to their playing. Elsewhere, however, the brass live in fear of each other. In the traditional arrangement, the trumpets are seated immediately in front of the trombones, whose stentorian blasts are not to be recommended at close quarters.

The greatest seating challenge of all concerns the percussion. This is usually left to the players themselves – the only members of the orchestra who are called upon to walk around during the performance, as they switch from xylophone to cymbals to bells to Chinese blocks, and so on. Then, too, many of their instruments take up a lot of floor space, more than any of their colleagues'.

8. Size and Constitution

What is the difference between a chamber ensemble and an orchestra?

The deciding factor, traditionally, has been the number of players allotted to a part. An octet, with one player per part, is a chamber ensemble, whatever its constitution (all strings, strings and wind, wind and brass). With two players per part it becomes an orchestra.

What is the largest orchestra ever assembled?

Some things stretch credulity to near breaking point, but it is an apparently well-documented fact that at a concert in Boston, Massachusetts in 1872 Johann Strauss the Younger conducted an orchestra of 2,000 and a chorus ten times that size (who were presumably armed with telescopes and serried across the harbour).

9. *A Guide to Further Listening*

Violin

Violin Miniatures	Naxos 8.550306
Brahms: <i>Hungarian Dances</i> for violin and piano	Naxos 8.553026
Bartók: Duos for two violins	Naxos 8.550868
Vaughan Williams: <i>The Lark Ascending</i>	Naxos 8.553955
Vivaldi: <i>The Four Seasons</i>	Naxos 8.550056, 8.553219

Viola

Mozart: 'Kegelstatt' Clarinet Trio	Naxos 8.550439
Mozart: Duos for violin and viola	Not released on Naxos
Mozart: <i>Sinfonia concertante</i>	Naxos 8.550332
Bartók: Viola Concerto	Naxos 8.554183

Cello

Bach: Cello Suites	Naxos 8.550677, 8.550678
Beethoven: Cello Sonatas	Naxos 8.550479, 8.550478
Various: <i>Le Grand Tango</i>	Naxos 8.550785

Double-bass

Bottesini: Music for Double-bass and Piano, Vol. 1

Naxos 8.554002

String Trio

Schubert: String Trio

Naxos 8.550388

Beethoven: String Trios

Not released on Naxos

String Quartet

Haydn: String Quartets (complete)

Naxos 8.552301

Mozart: String Quartets

Naxos 8.550540, 8.550541,

Naxos 8.550542, 8.550543, 8.550544,

Naxos 8.550545, 8.550546, 8.550547

Beethoven: String Quartets

Naxos 8.555058, 8.555059,

Naxos 8.555060, 8.554181, 8.555062,

Naxos 8.555063, 8.554593, 8.554594, 8.554592

String Quintet

Mozart: String Quintets (quartet plus 2nd viola)

Naxos 8.553103, 8.553104, 8.553105

Schubert: Quintet in C (quartet plus 2nd cello)

Naxos 8.550388

Flute

Various: *Dance of the Blessed Spirits*

Naxos 8.554166

Bach: Flute Sonatas

Naxos 8.553754, 8.553755

Mozart: Flute Quartets (complete)

Naxos 8.550438

Various: Romantic Music for Flute and Harp

Naxos 8.554400

Oboe

Bach: Oboe Concertos

Naxos 8.554602

Various: *The Art of the Oboe*

Naxos 8.553991

ClarinetVarious: *Clarinet Evergreens*

Naxos 8.553427

Mozart: Clarinet Quintet

Naxos 8.550390

French Horn

Brahms: Horn Trio

Naxos 8.550441

Mozart: Horn Concertos

Naxos 8.553592

Various: Horn Concertos

Naxos 8.550393

Bassoon

Various: Bassoon Concertos

Naxos 8.553456

Mozart: Five Divertimentos

Naxos 8.553585

Woodwind Quintet

Reicha: Wind Quintets, Vols 1, 2 & 3

Naxos 8.554228, 8.550432, 8.553528

Beethoven: Wind Quintet (& Mozart: Piano Quintet)

Naxos 8.550511

Trumpet

Various: Famous Trumpet Concertos

Naxos 8.550243

Various: *The Art of the Baroque Trumpet*; Vols 1–5

Naxos 8.553531, 8.553593, 8.553735,

8.554375, 8.555099

Vivaldi: Wind Concertos (for double winds)

Naxos 8.553204

The Instruments of the Orchestra

Trombone

Various: Trombone Concertos

Naxos 8.553831

Various: *The Art of the Trombone*

Naxos 8.553716

Tuba

Vaughan Williams: Tuba Concerto

Not released on Naxos

Mussorgsky: *Pictures at an Exhibition* (orch. Ravel) – No. 4

Naxos 8.550051

Brass Ensemble

Gabrieli: Music for Brass, Vols 1, 2 & 3

Naxos 8.553609, 8.553873, 8.554129

Percussion

Bartók: *Music for Strings, Percussion and Celeste*

Naxos 8.550261

Bartók: *Sonata for Two Pianos and Percussion*

Not released on Naxos

Shchedrin: *Carmen Suite*; Concerto for Orchestra

Naxos 8.553038

String Orchestra

Various: *English String Festival*

Naxos 8.550331

Various: Scandinavian String Music

Naxos 8.553106

Corelli: Concerti Grossi, Op. 6

Naxos 8.550402, 8.550403

Mixed Concerti Grossi

Bach: 'Brandenburg' Concertos

Naxos 8.554607/8

Handel: Concerti Grossi, Op. 6

Naxos 8.550157, 8.550158

Full Orchestra

Britten: *The Young Person's Guide to the Orchestra*

Naxos 8.550335

Bartók: Concerto for Orchestra

Naxos 8.550261

Ravel: *Daphnis et Chloé* Suite No. 1; *Boléro*; *Ma Mère l'oye*;

Valses nobles et sentimentales

Naxos 8.550173

10. *Recommended Reading*

Since even important books and standard texts go in and out of print with regrettable rapidity, and since the subject concerned is of perennial rather than topical interest, the following list cannot hope to keep abreast of the vagaries of the publishing world and is based entirely on the intrinsic merits of the books discussed. All of them should be obtainable at the larger city and university libraries.

By far the most entertaining, wide-ranging, and musically informed book on the subject known to me is *A Companion to the Orchestra* by the late British conductor Norman Del Mar (Faber and Faber Ltd, London, 1987; ISBN 0-571-14736). An alphabetical reference book rather than a scholarly narrative, it embraces a range of instruments and oddments of extraordinary variety, while laying no claim to being comprehensive in the repertoire cited under any particular entry. As a pointer to incipient researchers it could hardly be bettered, though it contains no bibliography (the contents have been entirely gleaned from the author's practical experience and the fruits of his invigorating curiosity). It is concerned exclusively with the usefulness, character, and provenance of the instruments discussed, so readers wanting substantial historical background will have to look elsewhere.

An excellent starting place is *Musical Instruments Through the Ages*, edited by the late Anthony Baines (Penguin Books Ltd, Harmondsworth, Middlesex, England, 1961; reprinted with revisions in 1966). Written by acknowledged experts in their respective fields, it ranges far

beyond the confines of the orchestra (though there are few instruments apart from the very ancient which haven't figured somewhere, however peripherally, in the orchestra's history). The writing styles vary, inevitably, and the tone is sometimes dispiritingly academic in its bloodless thoroughness. But the book is a mine of information, crowned by an extensive, though increasingly dated, bibliography, and can be recommended very highly.

Also recommended, indeed even more warmly, is *The History of Orchestration* by Adam Carse (a Dover reprint, ISBN 0-486-21258-0, of the original published by Kegan Paul, Trench Trubner & Co., London, in 1925). The book deals fascinatingly with the evolution of orchestral instruments and the techniques used to play them, but its particular value lies in its continual relating of the instruments to their musical purposes in the work of all the great orchestral composers from Purcell to Richard Strauss.

Readers interested in a more general history of the orchestra itself could start with *The Orchestra* by Henry Raynor (Charles Scribner's Sons, New York; Robert Hale Ltd, London, 1978; ISBN 0-684-15535-4). This is highly informative and reasonably concise (207 pages) but lacks the air of enthusiasm, breadth of reference, and absorbing readability which characterise two more books by Adam Carse (see below), both of which are classics in the field.

The Orchestra in the Eighteenth Century (Cambridge, 1940) and *The Orchestra from Beethoven to Berlioz* (Cambridge, 1948), both by Carse, are indispensable reading for anyone seriously interested in the orchestra and its development, replete with numerous illuminating and often amusing character sketches, and enlivened throughout by meticulously documented quotations from newspapers, journals, memoirs, etc. Both books are also fascinating on the development of orchestral conducting through the centuries. Carse was a musician and composer himself, and his first-hand experience of music-making in all its forms is reflected in his writing throughout.

Inevitably more up to date and comprehensive, but strictly for the seriously committed reader, is *The New Grove Dictionary of Musical Instruments*, edited by Stanley Sadie. In three volumes, containing a staggering 14,000 articles, it deals exclusively with the study of musical

instruments and is likely to remain the definitive guide to the history, construction, and performance practice of over 12,000 instruments from every culture, past and present – including 10,000 non-Western and folk instruments. Modern instruments, such as the synthesiser, are also covered, and an extensive exploration of different techniques and applications is given for every instrument discussed. This is quite simply the most comprehensive and authoritative study of instruments ever published. For most, the price would be prohibitive, so it's either a library job or a search on the Internet. Up-to-date information can be found on the *New Grove* website (www.grovreference.com).

11. Spoken Text

Violin

1 Wagner: Overture to ‘TannhKuser’

Oh! To be a conductor! To weld a hundred men into one singing giant, to build up the most gorgeous arabesques of sound, to wave a hand and make the clamouring strings sink to a mutter, to wave again, and hear the brass crashing out in triumph, to throw up a finger, then another, and another, and to know that with every one the orchestra would bound forward into a still more ecstatic surge and sweep, to fling oneself forward and for a moment or so keep everything still, frozen, in the hollow of one’s hand, and then to set them all singing and soaring in one final sweep, to sound the grand Amen!

J.B. Priestley

That wonderful fantasy by J.B. Priestly must have been shared by many more people (mostly boys and men, I’d guess) than would ever admit it. And who can wonder? The sound of the orchestra in full flood is a very heady brew. And I’d better watch my words with care because the fact is there’s no such thing as *the* orchestra. There are large orchestras and small ones, string orchestras, mixed orchestras, jazzbands, and balalaika orchestras. The composer Heitor Villa Lobos wrote for an orchestra consisting entirely of cellos (!). And, at

the time when this story begins, the orchestra – *any* orchestra – sounded very different indeed from what we’ve just heard.

2 **Anonymous: Domna, pos vos ay chausida**

3 The sound of a dance band, from the twelfth century.

In the course of the journey, the adventure, that lies ahead of us, we’ll be hearing just about every instrument from the Middle Ages to the present. From instruments with wonderful, distant names like sackbut, crumhorn, shawm, and zarb, to twenty-first century computers and synthesisers. Sometimes we’ll be eavesdropping just for a matter of seconds; sometimes – quite often actually – we’ll be hearing whole movements, and not only of orchestral music. The idea is to allow plenty of time to become familiar with the various instruments, and with the sheer variety of music that’s been written for them, in each case bringing out a different aspect of their personalities, if you like – and they do have personalities. They’re never mere sounds. They’re never simply acoustical phenomena. In one way or another they reflect, between them, virtually every aspect of the human spirit. And in a big way, that includes having fun. After all, we don’t merely use instruments, we play on them. And in their own way, with more than a little help from composers of course, they play on us; none more so than the violin.

4 **Brahms, tr. Joachim: Hungarian Dance No. 7 for Violin and Piano**

One of the *Hungarian Dances* by Johannes Brahms.

5 The violins are the backbone of every conventional orchestra, from Monteverdi to the present (there are overwhelmingly more of them than of any other instrument), so it’s with them that we’ll start, and with them that we’ll stay the longest.

The violin is amongst the most expressive and versatile instruments ever conceived. And never more so than today. Its range is greater than ever before, and while most musicians

agree that it's near if not already at the end of its development, composers are still dreaming up new things to do with it. For more than three centuries now, it's been regarded by many music lovers, probably the majority, as one of the most beautiful, one of the tenderest instruments ever invented.

6 Brahms: Violin Concerto in D major (Adagio)

Part of Brahms's Violin Concerto.

7 As we'll see – more importantly, as we'll hear – the violin has changed a lot over the centuries, and so has the way it's been regarded. You'd hardly guess it from sounds like those we've just been hearing, but for a long time the violin was seen as the instrument of the devil.

8 Stravinsky: The Soldier's Tale (Triumphal March of the Devil)

9 The violin as the instrument of the devil, courtesy of Igor Stravinsky, in his quirky little morality play *The Soldier's Tale*.

But it wasn't for making sounds like *that* that the violin earned its devilish reputation. It was because no instrument in the world was ever more seductive, more alluring, more conducive to sheer pleasure than the violin. When the gypsies of eastern Europe – perhaps the most manipulative music makers in history – when they wanted to fire the blood of their listeners, to work them up into a frenzy of pleasurable excitement, it wasn't the flute or the clarinet or even the oboe that they chose as their principal weapon: it was the violin.

10 Anonymous: Csárdás Music

11 The exotic sound of a Hungarian gypsy band.

The violin could speak – can speak – in many tongues, and many tones. The actual sound of the flute may be closer to the actual sound of birdsong, but when Antonio Vivaldi wanted to evoke the birds of the air in *The Four Seasons*, it wasn't to the flute that he turned, either.

12 Vivaldi: The Four Seasons (Spring, mvt 1)

13 And a little later, this time in the second concerto, birds are once again unmistakable, especially music's natural favourite of all birds.

14 Vivaldi: The Four Seasons (Summer, mvt 1)

15 Like the devil, the violin is a master of disguise. As we heard earlier, it can be the very image of sweetness, innocence, and consolation. But it can also be a debonair, not perhaps entirely trustworthy man about town – especially if the town happens to be Vienna.

16 Kreisler: Old Viennese Dance No. 3 'Schön Rosmarin'

17 One of the Old Viennese Dances by Fritz Kreisler.

Well, that sort of suave charm is a long way from the almost menacing sensuality of Maurice Ravel's *Tzigane*. This is another side of the violin altogether.

18 Ravel: Tzigane

19 The opening of Ravel's *Tzigane* – another evocation of the gypsies.

So, do we now have the true measure of this phenomenon called the violin? Not until we reckon in this as well. And all from the same four strings.

20 Paganini: Caprice No. 24

21 Scaling the heights in Nicolò Paganini's Twenty-fourth Caprice.

And when people first heard Paganini doing it (no-one had ever even thought of doing such things before, much less been able to), the rumour went round that he was none other than the devil himself. In some ways Paganini was an innovator, a real pioneer in violin technique. In others, he built on techniques which already existed but carried them further than anyone before him. One of these was already well advanced in the days of Vivaldi and Bach, back in the early 1700s: the technique known as tremolo or tremolando. This involves

the rapid repetition of single notes and it never fails to increase the sense of excitement. The first time I heard it was in the Fourth of Bach's 'Brandenburg' Concertos.

Bach: Brandenburg Concerto No. 4 (last mvt)

In that case, the excitement for me is a kind of joy, every time I hear it. But the second time I encountered the string tremolo, in a movement for string quartet by Franz Schubert, I thought it was one of the most frightening things I'd heard in music. And, once again, I still do.

Schubert: Quartettsatz in C minor

Of all the specific mainstream techniques, the string tremolo is probably the most unsettling. It practically spells the word *agitato*.

22 Britten: Variations on a Theme of Frank Bridge (No. 7)

23 One of Benjamin Britten's *Variations on a Theme of Frank Bridge*.

In Prokofiev's ballet *Romeo and Juliet* there's one passage in the very highest register of the violins where the use of the tremolo turns what might otherwise have been merely creepy into something which should emphatically not be heard just before bedtime.

24 Prokofiev: Romeo and Juliet (Act IV)

25 In each of the cases we've just heard, the effect, and the intention, is purely musical. But in *The Four Seasons* Vivaldi uses it to illustrate part of a story: the shivering of travellers, crossing the ice in the dead of winter.

26 Vivaldi: The Four Seasons (Winter, mvt 1)

27 The same technique – five completely different impressions. But all of these are in some way dramatic. Exciting. Energising.

At the opposite extreme is a sound produced not by a special technique but by a special attachment, clipped onto the bridge of the violin. Unsurprisingly, it's called a mute. It

doesn't silence the strings of course, but it gives them a hushed, slightly cotton-woolly, intimate sound which can make the listener feel almost like an intruder.

28 Debussy, tr. A. Roelens: Suite bergamasque (Clair de lune)

29 Part of Debussy's *Clair de lune*.

When we move to the entire string section of a symphony orchestra, the use of mutes is bound to produce a rather different character as well as a different quantity of sound. How intimate can it feel, after all, when it involves twenty-five or thirty players spread out on the stage of a concert hall? Well 'intimate' may no longer be the right word, but there's still a feeling of extraordinary gentleness.

30 Mozart: Piano Concerto No. 21 in C major, K. 467 (slow mvt)

31 Muted violins in Mozart's Piano Concerto No. 21.

It would be stretching a point to say that the violin, like the other string instruments, has a split personality, but in a way it *is* two instruments in one: a bowed instrument, which can perfectly reflect the rise and fall and the sustained tone of the singing human voice; and a plucked instrument, which has more in common with the banjo, the mandolin, and the ukelele. This plucking technique is known as *pizzicato*, and Johann Strauss devoted the whole of a delightful polka to it.

32 J. Strauss: Pizzicato Polka

33 The *Pizzicato Polka* by the younger Johann Strauss.

One of the most beautiful textures in music, for me, comes in the slow movement of Prokofiev's Second Violin Concerto, where we get both aspects of the violin's personality combined. The orchestral strings provide a *pizzicato* accompaniment to one of the most beautiful examples of soaring melody in the whole of the orchestral repertoire.

34 Prokofiev: Violin Concerto No. 2 in G minor (slow mvt)

35 Part of Prokofiev’s Second Violin Concerto.

The violin is one of the most expressive, and perhaps the most ‘romantic’ instrument in the orchestra. And a lot of this has to do with the range and character of its tone. The subtlety of tonal colouring extends, though you mightn’t guess it, even to the use of pizzicato. Here, for example, we have a well-nourished, mellow, even resonant pizzicato from the Russian composer Dmitry Kabalevsky.

Kabalevsky: Colas Breugnon (The People’s Feast)

And now, from that healthy, full-bodied pizzicato by Kabalevsky to a pizzicato which is drier, leaner, hungrier. There’s not a lot of comfort in this sound.

Warlock: Capriol Suite (Tordion)

Depending on how it’s used, pizzicato can turn the violin, like its siblings, into what is effectively a percussion instrument, not so different from drums, xylophones, vibraphones. Prokofiev gets that effect in his *Romeo and Juliet*.

Prokofiev: Romeo and Juliet (Act I)

Another, very different composer, Gustav Mahler, used pizzicato as percussion in his highly lyrical Fourth Symphony.

Mahler: Symphony No. 4 (mvt 2)

The most direct way of using the violin for percussive effect is actually to treat it as an authentic percussion instrument by turning the bow upside down and striking the strings with the wood of the bow rather than the hair. This technique is indicated by the term *col legno*, and it can be heard to frightening effect in Gustav Holst’s orchestral dazzler *The Planets*, which starts off with ‘Mars – the bringer of War’.

36 **Holst: The Planets (Mars – the bringer of War)**

[37] Most of the ‘special effects’ used by solo string-players are also used in the orchestra, by whole sections – all the violins together, for example – or even the entire string family. Pizzicato and tremolo are probably the commonest, but close behind them comes the technique known as double-stopping, or sometimes even triple-stopping. This is when two or more notes are played at the same time, under the same bow, giving the impression of two instruments rather than one, and enabling the violin effectively to play duets with itself. It was a technique established well before Bach, but no-one ever used it more ingeniously than he did. This comes from one of his sonatas for unaccompanied violin, played on an instrument, and in the style, of his own time – and producing quite a different kind of tone: thinner, harder, less resonant than what we’re used to hearing today.

Bach: Sonata No. 3 in C major for unaccompanied violin (Fugue)

And now a later example of the same technique, this time from a much later period: one of Johannes Brahms’s *Hungarian Dances* – two and a half minutes of unashamed sensuality.

[38] **Brahms, tr. Joachim: Hungarian Dance No. 4 for Violin and Piano**

[39] Double-stopping is a standard feature of gypsy music, and of a lot of folk music. When Vivaldi wanted to conjure up a picture of rustic yokels in *The Four Seasons*, double-stopping gave him exactly the sort of grating sound he wanted.

[40] **Vivaldi: The Four Seasons (Autumn, mvt 1)**

[41] Vivaldi’s use of double-stopping was perfectly suited to its purpose, but it pales into insignificance compared to what Ravel did with it a couple of hundred years later, in his orchestral showpiece *Boléro*. For a start, he uses a huge twentieth-century orchestra – and then he has every one of the string players double-stopping. The technique itself is no more than what Bach and Vivaldi used, but the difference in sound might almost have come from another world.

42 Ravel: Boléro

43 Double-stopping is a very clever technique, and it can be very effective indeed, but it can only approximate the sound of a real violin duet (one for two players, on two different instruments). Not even the greatest violinist can manage to play something like this without its sounding at least a little harsh, a little strident.

44 Joachim: Cadenza to the Violin Concerto by Brahms

45 Double-stopping in Joachim's Cadenza to Brahms's Violin Concerto. Now compare that with a real violin duet, one of the Forty-four Duos by Béla Bartók.

46 Bartók: Forty-four Duos (No. 1: Teasing Song)

47 One of the Forty-four Duos by Béla Bartók – a priceless collection of miniatures, of which this is another, demonstrating the violin's wonderfully rich lower register:

48 Bartók: Forty-four Duos (No. 2: Maypole Dance)

49 And now to a very different violin duo, this one accompanied by string orchestra and written more than two centuries before the Bartók we've just heard. It runs to almost seven minutes, and it's probably the most beautiful accompanied violin duet in the history of music.

50 Bach: Concerto in D minor for two violins (Largo)

51 The slow movement from Bach's Concerto for two violins.

Now that doesn't employ any of the special effects a violinist learns to master – no pizzicato, no double-stopping, no harmonics, hardly any of the techniques which abound in Paganini; but it tells you more about the soul of the violin than all the works of Paganini put together. And the soul of the violin is in song.

For some reason, the sound of the violin – well played, of course – seems to speak straight to the heart in a way that no other instrument quite does. Well, yes and no: because this weird passage is also the sound of the violin, but it's a very long way indeed from the world of song.

52 Prokofiev: Violin Concerto No. 1 in D major (mvt 2)

53 That very strange music comes from the First Violin Concerto of Prokofiev.

The use of so-called harmonics – those almost inconceivably high notes we heard from Paganini earlier – took a while to infiltrate the symphony orchestra, but when it did it was often to magical, yet sometimes unsettling, effect. We get it from Mahler, in his First Symphony – hovering like a mirage, over the dark goings-on below.

54 Mahler: Symphony No. 1 ‘Titan’ (mvt 1, opening)

55 Harmonics from the violins, in Mahler.

Tchaikovsky’s use of harmonics in his ballet *The Sleeping Beauty* is not only very strange, but for his time, very daring...

56 Tchaikovsky: The Sleeping Beauty (Act II, No. 15: Entr’acte)

57 Tchaikovsky returning to normal in *The Sleeping Beauty*. One of the most striking (and one of the shortest) uses of violin harmonics comes in Ravel’s setting of another fairy story, *Beauty and the Beast*. It marks the moment when the Beast is magically transformed into the handsome Prince. First we hear the eerie harmonics and then, as the transformation takes place, we hear the violin returning to its own true identity.

58 Ravel: Ma Mère l’oye – Mother Goose (Beauty and the Beast)

59 The transformation of Beast into Prince, in part of Ravel’s bewitching *Mother Goose Suite*. But for my money the golden palm, in this field, must go to Stravinsky in his ballet *The Firebird*. It doesn’t last long, but in a few short moments it creates an atmosphere which transports us into another dimension.

Stravinsky: The Firebird (Introduction)

60 All in all, it has to be said that the use of harmonics in orchestral scores is the exception rather than the rule. But this is not to say that composers tend to avoid very high notes when writing for the violin, in or out of the orchestra. The natural upper notes of the orchestral violins are entrusted with some of the most effective, and some of the most varied music in the whole of the orchestral realm. True to what I called their soul, they can sing their hearts out with more emotional ‘grab’ than any other instruments in the world.

61 **R. Strauss: Also sprach Zarathustra (Of the Afterworldsmen)**

62 Part of Richard Strauss’s *Also Sprach Zarathustra*.

As well as expressing the most intense of emotions, the violins can unleash all the playfulness and energy of a young colt let loose in a new field.

63 **Britten: Variations on a Theme of Frank Bridge (No. 4)**

64 One of Benjamin Britten’s *Variations on a Theme of Frank Bridge*.

And now, Britten in a very different piece, using the same high register to create a very different mood indeed.

65 **Britten: Four Sea Interludes (Dawn) from ‘Peter Grimes’**

66 And to end this sequence of the violins in their upper register – and, in fact, our outing with the violins themselves – a charming little elfin dance by a very little-known composer, Joseph Hellmesberger.

67 **Hellmesberger: Elfenreigen**

Lower strings

68 It's strange that the viola, which is really just a bigger violin, should have such a low profile compared to its brilliant upper neighbour, and even compared with its nearest lower neighbour, the cello. Bach featured two violas in his Sixth 'Brandenburg' Concerto; Haydn, Mozart, and Beethoven all adored it and played it to a professional standard; and the great Paganini was as good on the viola as he was on the violin.

But the truth is that the viola isn't just a bigger, deeper violin. It's an instrument with a particular tone colour, a particular quality of voice, all its own. As you can hear, in this movement from a viola concerto by Georg Philipp Telemann.

69 **Telemann: Viola Concerto (mvt 1)**

Part of a viola concerto by Telemann.

70 When the Soviet-Armenian composer Aram Khachaturian wrote for the viola in his ballet *Gayane*, he wanted, and he got, a very different kind of sound from it – something fuller, fruitier, more exotic.

71 **Khachaturian: Gayane Suite No. 1 (Armen's Solo)**

72 I think it's fair to say that most of the music written for the viola, for the orchestral viola, anyway, has a predominantly introspective, rather nostalgic, even melancholy character. In terms of mood, of atmosphere, if you like, the Passacaglia from Benjamin Britten's opera *Peter Grimes* has quite a lot in common with that bit of Khachaturian, but the actual quality of the sound is very different – leaner, drier – and at the end of this passage we can hear that it's not only the violin that can play harmonics. In fact very nearly the whole of the violin's upper register is also available to the viola.

73 **Britten: Passacaglia, Op. 33b from 'Peter Grimes'**

- 74 Harmonics aren't the only 'special effects' which are common to both violins and violas. Another is the pizzicato. But the viola can bring a special, rich twanginess to it that the violins lack.

R. Strauss: Don Quixote

Up until the 1830s, all music written for the viola aimed – unlike that example – to draw out the beauty and the richness of the instrument. But in part of his *Harold in Italy*, written for Paganini, the French composer Hector Berlioz drew sounds from it that retain their almost metallic strangeness even today.

75 **Berlioz: Harold in Italy (mvt 4)**

The technique used to make those strange sounds is called *sul ponticello*. Nothing to do with the cello; it just means to play with the bow near the bridge, and that applies to all the strings, not just the viola.

- 76 As with the violin, the use of the mute on the viola produces a particularly intimate, gentle, often a very poignant kind of sound. In one of Antonín Dvořák's beautiful *Cypresses* for string quartet, derived from love songs he'd written earlier, all the instruments are muted. The viola leads to begin with, but, as it retreats into a more generalised quartet texture, it continues to nourish the sound of the quartet as a whole, and to impart its own special brand of nostalgia.

77 **Dvořák: Cypresses (No. 9)**

- 78 One of Dvořák's *Cypresses*. Naturally enough, the rather intimate, 'personal' character of the viola loses some of that immediacy when we turn to the massed violas of the modern symphony orchestra. But, even as a group, they have a certain something which is subtly different from violins playing in the same register. In terms of pitch Gustav Mahler could have had the violins carry the main tune in the slow movement of his Fourth Symphony; but

he didn't. Above the warm support of the cellos, he gave it to the violas, whose particular sonority helps to define the whole feeling of the tune.

79 Mahler: Symphony No. 4 (mvt 3)

80 By the time Mahler wrote that, in 1901, the viola, and more particularly ways of playing it, had changed enormously since the days of J.S. Bach, who was the first great composer to put the instrument at centre-stage for all three movements of a major work. In the sixth of his 'Brandenburg' Concertos the two principal solo parts are for violas, and for his orchestra Bach dispensed with violins altogether. The scoring was – still is – unique. The sound of all string instruments back then – we're talking now of the early eighteenth century – was very much leaner, and lighter, more naturally buoyant than anything Mahler was used to hearing. Today, we've grown accustomed again, after a couple of hundred years, to hearing these works as Bach would have heard them. So, it's in a meticulously researched 'period' style that we'll hear now the last movement of what most musicians would acknowledge, I think, as the greatest hymn to the viola ever composed.

81 Bach: Brandenburg Concerto No. 6 (last mvt)

The last movement of Bach's 'Brandenburg' Concerto No. 6.

82 It's difficult, as anyone who's ever tried can tell you, to describe music, and it's even more difficult to describe sound – partly because our responses to both are extraordinarily personal. But with the cello, it seems to me, we come to an instrument whose very sound has an in-built nobility about it. A quality of dignity, of seriousness, but also of spirituality and human warmth.

83 Bach: Suite No. 1 for unaccompanied cello (Prelude)

The first movement of Bach's Suite No. 1 for unaccompanied cello.

- 84 If I were asked to name a single example from the orchestral repertoire which seems to me to sum up the very soul of the cello, I'd go immediately to the slow movement of Johannes Brahms's Second Piano Concerto, where the cello seems almost to have replaced the piano as the soloist.

85 **Brahms: Piano Concerto No. 2 in B flat major (mvt 3)**

- 86 Most orchestral composers tend to emphasise the cello's lower register, which makes sense, since even in the smallest ensemble it's the cello which provides the bass on which the whole of the piece is likely to be built. It's as important to the music as the ground floor is to whatever sort of building is constructed above it. And it can be very discreet, as in this aria for oboe and soprano from one of Bach's cantatas.

87 **Bach: Cantata 'Herz und Mund und Tat und Leben', BWV 147
(Soprano Aria: Bereite dir, Jesu)**

Music from J.S. Bach's Cantata No. 147.

- 88 By the time Beethoven wrote his *Eroica* Symphony in 1803, music, and the orchestra, had changed dramatically, but the cello (now supported by the double-bass) was as fundamental as ever.

89 **Beethoven: Symphony No. 3 'Eroica' (finale)**

- 90 The opening of the finale to Beethoven's colossal *Eroica* Symphony, one of the mightiest musical structures ever created. And that bass line, so demurely plucked by the cellos, forms the bedrock on which the whole gigantic movement is based.

But the cello is not condemned to spend its life in the basement. Nor is it confined to music of high seriousness. And like all the other string instruments it can use harmonics to reach right up to the top of the violin's upper register.

91 Popper: Elfentanz, Op. 39

92 The *Elfentanz*, Op. 39 by David Popper.

But it's not only in recital showpieces like *that* that the cello is used in its highest register.

93 Tavener: The Protecting Veil (opening)

94 The unique beginning of John Tavener's haunting orchestral meditation *The Protecting Veil*.

Well, now we come abruptly down to earth again, not with a bang but a pluck. This would seem to be a cello with an identity-crisis.

95 Tagell: Flamenco

96 The cello as flamenco guitar, among other things, courtesy of the Spanish composer Huguety Tagell.

And we stay in Spain for our next few examples, written by the late Gaspar Cassadó, who was one of the great cellists of the twentieth century and was intimately at home with every aspect of his instrument's personality. His writing for the lower reaches of its range is as natural and as expressive as for any of the upper ones, and he makes liberal use of double-stopping.

97 Cassadó: Solo Suite for Cello (Sardana)

98 The cello is obviously a very versatile instrument, equally at home in its lower and its upper register. But it's in its middle register that it really comes into its own where what you might call romantic expression is concerned. Indeed its tone colour alone puts it in the violin class when it comes to sheer, raw emotion:

99 Rachmaninov: Oriental Dance, Op. 2 No. 2

100 It was to the cellos, supported by the double-basses, that Beethoven gave two of his most famous themes, both in the cello's middle register. First came this one, from the Fifth Symphony:

Beethoven: Symphony No. 5 (mvt 2)

The cellos in stately mood, in what may well be the most famous symphony ever written: Beethoven's Fifth.

Well, the symphony itself may be the most famous ever, but still more famous than that theme is this one from the Ninth Symphony. And here, as often, the cellos are joined by the double-basses:

101 Beethoven: Symphony No. 9 (finale)

102 The most famous tune in Beethoven's Ninth Symphony.

The lowest in pitch of the string family is the so-called double-bass. Partly because of its great bulk (a grown man has to stand up in order to play it), partly because of its almost caricaturishly deep voice, and partly because of the way some composers have written for it, the double-bass is often regarded in a rather comical light. Its ponderous image comes from things like the well-known *Carnival of the Animals* by Camille Saint-Saëns, in which the double-bass is comically cast as the Elephant. The tune, such as it is, is based on *The Ballet of the Sylphs* by Berlioz.

103 Saint-Saëns: The Carnival of the Animals (The Elephant)

104 'The Elephant', from Saint-Saëns' *Carnival of the Animals*. But the fact is that the double-bass is no elephant. It can be intensely expressive and graceful.

105 Bottesini: Elegy No. 1 in D major

No elephant there. In fact, if you're going to make an animal out of the double-bass, you'd do better to choose the giraffe, which can eat off the ground and from the tops of the trees.

106 The sheer range of the double-bass, thanks again to the phenomenon of harmonics, is the greatest of all the string instruments. We heard a few just then, but it can go even higher.

Bottesini: Allegro di concerto, ‘Alla Mendelssohn’

And it’s also capable of very considerable virtuosity.

107 Bottesini: Capriccio di bravura

The *Capriccio di bravura* by Bottesini.

108 Double-bass solos in orchestral scores are rare, let alone expected. It’s partly its surprise value, as well as its unfamiliarity, that makes it so memorable at the beginning of the slow movement in Mahler’s First Symphony. And if the tune reminds you of the old round *Frère Jacques*, it’s because that’s exactly what it is – only in the minor mode.

Mahler: Symphony No. 1 ‘Titan’ (mvt 3)

And now, from the third movement of Mahler’s First Symphony to the first movement of his Third. A very different use of the instrument.

Mahler: Symphony No. 3 (mvt 1)

Mahler again.

109 We hear a very different voice in the second movement of Prokofiev’s *Lieutenant Kijé Suite*. His double-bass is using a mute, which gives the tone a curiously reedy sort of effect, as though we were actually hearing a wind instrument; and the addition of the magical, tinkering celeste towards the end of this muted solo is typical of Prokofiev’s amazing ear for instrumental colour.

Prokofiev: Lieutenant Kijé Suite (Kijé’s Wedding)

In another work, his ballet *Romeo and Juliet*, Prokofiev uses the double-bass to intensify and deepen the effect of wind instruments in a rather more sinister environment.

Prokofiev: Romeo and Juliet (Act III)

And a little while later in the same act he combines the bass clarinet with a shivering tremolo from the double-basses which is positively frightening.

Prokofiev: Romeo and Juliet (Act III)

Well, if that music frightens us listeners, this passage from Beethoven's Fifth Symphony frightens the double-bass players.

110 Beethoven: Symphony No. 5 (mvt 3)

And with that passage from Beethoven's Fifth Symphony, we come to the end of our visit with the strings and move on to the second most important family in the orchestra: the winds.

Woodwind

111 In one form or another (and there are a lot of them, actually) the flute is one of the oldest instruments in the world, going right back to the Stone Age, two or three million years ago. It's repeatedly mentioned in the Old Testament, it was very much a part of musical life in ancient Egypt, and it's never been far from an aura of magic.

112 Debussy: Prélude à l'après-midi d'un faune

113 Bewitching music from Claude Debussy, music which for many people has defined what a flute sounds like.

In addition to being sultry, sensual, almost erotic, the flute has, also, terrific agility – which usually means as well that the tone quality will be considerably leaner, and lighter, than what we've just heard.

114 Bach: Orchestral Suite No. 2 in B minor (Badinerie)

115 A movement from Bach's Orchestral Suite in B minor.

Like most instruments the flute comes in a variety of shapes, sizes, and characters, and reflects many different places, periods, and ways of life. Far removed, on the surface, from both the Debussy and the Bach we've just heard is the Sephardic music of fifteenth-century Spain, but all three belong ultimately to the same story.

116 Anonymous: Sa'dâwi

117 Today, people tend to think of the flute as a high instrument, as the lyric soprano of the woodwind, and of course it is. But it isn't only that. At the lower end of the pitch spectrum comes the bass flute, which is very rarely used, and very hard to recognise in an orchestral context. And then there's the alto flute, which isn't common, but it does surface now and again, and its particular brand of breathy melancholy seems to have had a special appeal for twentieth-century composers.

118 Sallinen: Chamber Music No. II

119 The alto flute as heard in Aulis Sallinen's Chamber Music II, Op. 41.

At the upper end of the pitch spectrum is the so-called piccolo – so called because 'piccolo' is the Italian word for 'small', and this is the smallest as well as the highest member of the flute family.

120 Rameau: La Naissance d'Osiris (mvt 6)

121 Part of Rameau's *La Naissance d'Osiris*.

And now, from a piccolo of the eighteenth century to one of its descendants in the twentieth.

122 Stravinsky: Suite No. 1 for Small Orchestra (Valse)

123 The piccolo in Stravinsky's First Suite for Small Orchestra.

Just as instruments tend to come in a considerable variety, so, as we've seen, do ways of playing them. But if any eighteenth-century flute players tried on this kind of thing, I wouldn't place any bets on their future.

124 **Sallinen: Chamber Music No. II**

125 More from Aulis Sallinen. An example of what's known in the trade as flutter-tonguing, and that's exactly what it is: instead of blowing in the normal way you trill the tongue – thr-r-r-r-r-r-r-r-r-r-r-r-r-r-r-r – something like that. Just the sort of thing you'd expect from a 'modern' contemporary composer like Aulis Sallinen. But a Romantic nineteenth-century composer named Tchaikovsky beat him to it by more than eighty years.

126 **Tchaikovsky: The Nutcracker (Act II, No. 2: Scène)**

127 Tchaikovsky, in *The Nutcracker*.

Now, the kinds of flutes and piccolos we've been hearing – the so-called transverse flutes, which are held horizontally and blown across rather than into – are only one branch of the flute family, and until the eighteenth century they were the exception rather than the rule in European countries. Through most of European history the term 'flute' meant what we now call the recorder. And for very many years in the West, through much of the twentieth century in fact, the recorder was mainly thought of as a child's instrument. But that's certainly not the way Telemann thought of it.

128 **Telemann: Recorder Suite in A minor (Menuet II)**

129 A movement from Telemann's Recorder Suite in A minor.

As we come down the pitch scale from the high flute, the next woodwind instrument we meet is the oboe.

For many composers, the oboe is one of the most beautiful, most touching, most poignant of all instruments. But there was a time when beauty was not its greatest claim to fame.

130 **Baston: Naelden, Naelden**

131 Dance music, fifteenth-century style, back when the oboe was called a shawm.

By the time of J.S. Bach it had evolved to something almost like the oboes of today, and it drew from him some of the most sublime and uplifting music he ever wrote. The best of it, I think most musicians would agree, is to be found in his cantatas, which are full of arias and duets in which the oboe is every bit as important as the voices, the main difference being that the oboe, of course, can't sing words. Neither can the violin, but in this context that's their only limitation.

132 **Bach: Cantata 'Ein feste Burg ist unser Gott', BWV 80 (No. 7: Duetto)**

133 The duet from Bach's Cantata No. 80.

As with the flute, the oboe is almost as much a family as an instrument. Its next of kin, though, is one of the most misleadingly named of all instruments. The cor anglais, or 'English horn', is neither English nor a horn, but rather a low-pitched oboe which has a very distinctive sound – recognisably an oboe but with just a hint of a trumpet somewhere in the background. It's been widely associated with feelings of longing and nostalgia, but this is mainly because of its starring role in the slow movement of Dvořák's *New World* Symphony, where it fits the mood like a glove.

134 **Dvořák: Symphony No. 9 'From the New World' (mvt 2)**

135 If a sound, as distinct from a tune, can be called ‘lonely’, the sound of the cor anglais could be said to fill the bill. It certainly does in Sibelius’s tone poem *The Swan of Tuonela*.

136 **Sibelius: The Swan of Tuonela**

137 The cor anglais as a Finnish swan. I think my own favourite of all cor anglais parts is in Haydn’s Symphony No. 22, where, in conversation with the French horn, it’s neither lonely, nor slinky and exotic, but just plain beautiful.

138 **Haydn: Symphony No. 22 ‘The Philosopher’ (opening)**

139 Part of Haydn’s Symphony No. 22.

Another version of the oboe, pitched roughly halfway between the cor anglais and the normal oboe, is the oboe d’amore, which Bach used perhaps more beautifully than anyone; but it also gets a much later starring role (well, cameo role) in Maurice Ravel’s slinky blockbuster *Boléro*.

140 **Ravel: Boléro**

141 When it comes to sheer range of pitch amongst the woodwind, the clarinet family pretty well boxes the compass – from the sinister depths of the bass clarinet...

Herrmann: The Egyptian (Violence)

...to the raucous and squealy...

Janáček: Taras Bulba (The Death of Ostap)

...to the shrill and complaining...

142 **Stravinsky: Petrushka (No. 8: Peasant with Bear)**

...to the high spirits of a playful puppy.

Berlioz: Symphonie fantastique (last mvt)

And to the downright jazzy:

Prokofiev: Romeo and Juliet (Act II)

[143] Just as the high clarinets tend to be loud, so the bass clarinet tends to be soft – mainly because it’s quite difficult to control at anything other than a low volume. It’s much less versatile than its counterparts at the top end of the spectrum, but it has a very distinctive voice.

[144] **Khatchaturian: Gayane Suite No. 1 (mvt 5)**

[145] Music by Aram Khatchaturian.

The bass clarinet is used by most composers mainly as a colouring agent: a note here, a note there, often a little group, and sometimes a fairly extensive accompanimental role, lending depth and support, for instance to one of its higher-pitched siblings.

Stravinsky: Petrushka (No. 4: The Blackamoor)

The bass clarinet may normally play a purely supportive or colouristic role, but it does occasionally get a whole tune to itself, as we’ve already heard. Sometimes even a rather jaunty one.

Albéniz, arr. Breiner: Iberia (Almeria)

[146] Most of the normal clarinet parts in the orchestra lie comfortably in the middle of the instrument’s register. Though even here there’s quite a range. Relatively high is this charming little duet from Tchaikovsky’s *Snow Maiden*.

[147] **Tchaikovsky: The Snow Maiden (Scene 5: Melodrama)**

[148] And we find the clarinet at the bottom of its range in Prokofiev’s *Peter and the Wolf*.

149 Prokofiev: Peter and the Wolf (The Cat)

150 The clarinet isn't only a member of the standard symphony orchestra, it's often been welcomed as the honoured guest in a concerto – none quite so perfect as the concerto which was Mozart's last completed work, and which has probably won more people over to the clarinet than any other work before or since.

151 Mozart: Clarinet Concerto in A major (Rondo)

152 Now that's Mozart's Clarinet Concerto as it's usually heard, played on the so-called 'A' Clarinet. But the instrument he actually wrote it for was called the basset clarinet, which goes lower than the 'A' clarinet and has a distinctly different quality to the sound.

153 Mozart: Clarinet Concerto in A major (Rondo)

154 The sound of Mozart on the basset clarinet.

As we come further down the pitch range of the so-called woodwind instruments we meet two which are hard to classify, hence my reference to the 'so-called' woodwind. One is the French horn, which is a standard member of the classic 'woodwind' quintet; the other is the saxophone. Apart from the saxophone's reed, neither of these instruments has ever had any connection with wood. The saxophone looks like a brass instrument, because it is one, but sounds more like a wind instrument: a kind of cross-breed of the clarinet and the bassoon, with a bit of flute and oboe thrown in for good measure. It's a relatively infrequent visitor to the orchestra, but in the right hands it can make a vivid, even unforgettable impression. Introduced by the deep voice of the tuba in Zoltán Kodály's *Háry János*, it lends a wonderful air of crocodile tears to a mock lament for the defeat of Napoleon.

155 Kodály: Háry János Suite (mvt 4)

156 Like the clarinet, the saxophone comes in several sizes, and the soprano sax has a lighter, drier, flatter sound than its bigger siblings.

157 **Bizet: L'Arlésienne Suite No. 1 (Minuet)**

158 The soprano saxophone in Bizet's *L'Arlésienne* Suite No. 1.

Still higher is the little 'sopranino' sax, which makes its most memorable appearance in Ravel's *Boléro*.

159 **Ravel: Boléro**

160 The most famous use of the saxophone in the orchestra is without question, I think, Ravel's orchestration of 'The Old Castle' from Mussorgsky's *Pictures at an Exhibition*, where it alternates with its cousin the bassoon in a haunting evocation of the Russian middle east.

161 **Mussorgsky, orch. Ravel: Pictures at an Exhibition (The Old Castle)**

162 Well, as all jazz lovers know, there's nothing about the saxophone that says it has to be exotic or wistful. On the contrary, it can be quite contagiously good-humoured.

163 **Wiedoeft: Sax-o-phun**

164 Rudy Wiedoeft playing his own *Sax-o-phun*.

Of all the wind instruments, none has had such a raw deal from musical image makers as the bassoon. It's been typecast as a kind of huffing and puffing elderly relative who's amusing enough to have around in small doses, but you wouldn't want him to come and live with you. And it does have to be admitted that it plays the part very well.

165 **Prokofiev: Peter and the Wolf (Grandfather)**

166 The bassoon as Grandfather, in Prokofiev's *Peter and the Wolf*.

The 'puffa-puffa' image of the bassoon, though not necessarily a comical view of it, has only been intensified by its role as accompanist in some of the best music ever written, like this aria from one of J.S. Bach's best-known cantatas:

167 **Bach: Cantata ‘Weichet nur, betrübte Schatten’ (‘Wedding Cantata’), BWV 202 (Aria No. 1)**

168 An aria from Bach’s Cantata No. 202.

Well, we now leave the world of eighteenth-century Germany and travel to nineteenth-century Spain, where Georges Bizet, in his opera *Carmen*, has taken the bassoon right out of its accompanimental mode, removed the puff from the foreground, and given it a nice, four-square, good old-fashioned tune.

Bizet: Carmen Suite No. 1 (Les Dragons d’Alcala)

169 And we stay in Spain, once again courtesy of a Frenchman, at the point where Ravel hands over to the bassoon the one and only melody in his famous showpiece *Boléro*. This time we meet it in its upper register, and there’s not a hint of puffa-puffa left.

170 **Ravel: Boléro**

171 The English composer Arnold Bax, in his Third Symphony, stripped the bassoon not only of its puffa-puffa image but of any trace of exoticism. The tone is one of high seriousness, and beyond that, of an almost desolate loneliness.

172 **Bax: Symphony No. 3 (opening)**

173 When Stravinsky used the highest register of the bassoon at the start of his terrifying ballet *The Rite of Spring*, he produced a very different effect. An eerie mood which gives fair notice that we’re about to enter a whole new world of sound.

174 **Stravinsky: The Rite of Spring (opening)**

175 In Stravinsky's first ballet *The Firebird* there's a passage for solo bassoon which is so far from the conventional view that it might almost be another instrument. Drawing on its lowest register, Stravinsky uses the bassoon to communicate a lonely melancholy which is a world away from *Peter and the Wolf* – but not from Mussorgsky's 'Old Castle'.

176 **Stravinsky: The Firebird Suite (1919, Berceuse)**

177 Well, to end this particular sequence here's a movement which strikes a happy balance between the two extremes we've encountered so far. It comes from a bassoon concerto by one of Bach's lesser-known contemporaries, Johann Melchior Molter.

178 **Molter: Bassoon Concerto in G minor (finale)**

179 A movement from a bassoon concerto by Johann Melchior Molter.

Well, we mustn't take our leave of the bassoon without meeting one of its least encountered relatives, the very deep-voiced contra-bassoon. In Ravel's amazing setting of *Beauty and the Beast*, in his *Mother Goose Suite*, the contra-bassoon takes the part of the Beast, gradually rising in pitch as it comes closer to the moment of the Beast's transformation into the Prince.

180 **Ravel: Ma Mère l'oye – Mother Goose (Beauty and the Beast)**

181 The contra-bassoon in Ravel's *Mother Goose Suite*.

Well, we've now reached the point where we have to decide whether the French horn is a wind instrument or a member of the brass. And the musical answer, as opposed to the material one, is that it's both. It is actually made of brass, but because of its sound it's also a time-honoured member of the so-called woodwind quintet.

182 **Nielsen: Wind Quintet, Op. 43 (last mvt)**

183 Music taken from Carl Nielsen's Wind Quintet, Op. 43.

And now to a woodwind quintet from an earlier era, in which the horn plays a more prominent part than in the music we've just heard.

184 Reicha: Wind Quintet in A Minor, Op. 100 No. 5 (mvt 2)

A movement from a woodwind quintet by Antonín Reicha.

185 Well, we now take our leave of the horn under its woodwind hat, once again in a quintet. This time, though, its companions are a violin, two violas, and a cello. But the blend of instrumental colours is just as harmonious as with the wind.

186 Mozart: Horn Quintet, K. 407 (finale)

Brass

187 To a certain extent you could say that what the violin is to the string section, the trumpet is to the brass. It's the oldest, the most laden with symbolism, the most brilliant, and the most penetrating in sound. The earliest trumpets go back to prehistoric times, and one of the most spine-tingling experiences I've ever had was when I heard a recording of the first sounding in more than three thousand years of the trumpet found when the tomb of the Pharaoh Tutankhamun was opened in 1922. But the earliest trumpet music (I should probably say the earliest non-military trumpet music) to have survived at the very centre of the western classical tradition dates back no further than the eighteenth century. And I should also stress here that I'm talking not about the trumpet as part of a brass ensemble (more about that a little later), but about its use as a solo instrument – as in this exhilarating movement from one of Bach's 'Brandenburg' Concertos.

188 Bach: Brandenburg Concerto No. 2 (last mvt)

A movement from Bach's Second 'Brandenburg' Concerto.

189 There were many concertos for solo trumpet written well before that. And every one of them is in some way celebratory and exciting in character. The sheer brilliance of the trumpet is something which it's very difficult to conceal for long. And the brilliance of two trumpets? Well, that only adds to the thrill.

190 **Vivaldi: Concerto in C for two trumpets, RV537 (mvt 1)**

191 Music from Vivaldi's Concerto in C for two trumpets.

No matter what the work, no matter what the circumstances, there seems to be something innately ceremonial about the trumpet, certainly as it was used in the eighteenth century. In fact I think you could say that of all the instruments in the orchestra the trumpet is far and away the most public, and the most traditionally virile; I think also probably the most intimidating. It doesn't matter whether we're talking about Bach, Vivaldi, and Handel... or Aaron Copland. When the trumpet speaks, you pay attention.

192 **Copland: Fanfare for the Common Man**

193 Part of Aaron Copland's *Fanfare for the Common Man*.

Trumpets and drums. They go together almost like Siamese twins. There is something a little intimidating about that particular partnership, and always has been. That's why traditionally, in century after century, they've gone to war together. From one primitive tribe to another, some form of trumpet and drums has been used to stir the troops and frighten the enemy. And not only in primitive tribes. The trumpet has been used to herald the triumph over death itself.

194 **Handel: Messiah (The Trumpet Shall Sound)**

195 'The Trumpet Shall Sound' from Handel's *Messiah*.

‘And the dead shall be raised.’ Can you imagine that played on an oboe, or a violin, or even the grandest grand piano you could find? There’s no single instrument in the world that could begin to do justice to that most tremendous of prophecies. Except the trumpet. A one-line instrument, come to that. There’s no double-stopping on the trumpet. At the very thought of a trumpet, words like ‘glory’ and ‘triumph’ and ‘power’ and ‘splendour’ come to mind – certainly a musician’s mind. But there are other words too: ‘lonely’, for instance.

196 Gershwin: Piano Concerto in F (slow mvmt)

197 Part of George Gershwin’s Piano Concerto. Lonely, yes – but lonely in a big city. The trumpet is an urban instrument, be it New York, or Chicago, London or... Paris.

Gershwin: An American in Paris

City music. Definitely city music. There are other instruments for the cotton fields, and the mountain pasture, and the prairies. If the trumpet strays out of the city, it’s likely to be on some business. Recruiting for the army, maybe. Who knows?

Stravinsky: The Soldier’s Tale (The March)

Music from Stravinsky’s theatre piece *The Soldier’s Tale*. Technically speaking, that was a cornet, rather than a trumpet proper, but the two are so closely related that even conductors often can’t tell the difference.

Whatever the mood, the trumpet is a confident instrument. You can’t miss a sense of swagger in its voice sometimes, preening itself, strutting around as though it owned the world. ‘Come on, fella. You’ve met your match.’

198 Bizet: Carmen Suite No. 2 (Habanera)

199 But it’s not just pride and vanity in that voice. It has the ring of true courage, too. And it’s

contagious. No wonder others fall in step. No voice in the orchestra is more persuasive when the chips are down.

200 Bizet: Carmen Suite No. 2 (Toreador's Song)

201 The Toreador's Song from Bizet's *Carmen* Suite No. 2.

As well as boosting confidence and raising the morale, the trumpet is equally effective, when real danger approaches, at sounding the alarm – but subtly; and here, for the first time, we encounter the sound of a trumpet muted.

Stravinsky: Petrushka (No. 4: The Blackamoor)

Stravinsky, in *Petrushka*. And we get the muted trumpet, too, in Prokofiev's *Lieutenant Kijé* Suite.

Prokofiev: Lieutenant Kijé Suite (opening)

For all its rousing, militaristic qualities, the trumpet can also reflect the onset of sheer fatigue, as the night closes in, and the exertions of the day subside into memory.

202 Copland: Billy the Kid

Part of Aaron Copland's *Billy the Kid*.

203 One particularly striking use of the trumpet for purposes of dramatic characterisation comes in Ravel's amazing orchestration of Mussorgsky's *Pictures at an Exhibition*. The sixth picture, 'Samuel Goldenberg and Schmuyle', depicts a confrontation between two Jews, one rich, the other poor. Schmuyle, the wheedling beggar, is depicted by a high, muted trumpet, and the rather pompous Samuel Goldenberg by the strings.

204 Mussorgsky, orch. Ravel: Pictures at an Exhibition (No. 6)

205 Well, there's nothing wheedling about the music with which we'll take our leave of the

trumpet for the moment. Like so much of the most exalting music ever written, it comes from Bach – and what for many is his greatest work: the Mass in B minor.

206 **Bach: Mass in B minor ('Et exspecto')**

207 Wow! They don't make it any better than that. So, where do we go? Neither up nor down, but back. Back to an age that Bach probably knew nothing about, at least as far as music was concerned. Back, to the middle of the sixteenth century, more than a hundred years before Bach's birth, to the very dawn of the orchestra as a concept. When oboes were called shawms, and trombones, our next port of call, were called sackbuts (in England, anyway). The shawm we've already met, but it's the sackbut, or trombone, that leads the way in this dance from the 1550s.

208 **Anonymous: Aenmerckt nu hier**

209 When I said that came from the very dawn of the orchestra as a concept, I should really have said 'from just before' the dawn. When that was published in 1551 there was basically no distinction made between vocal and instrumental music, and the idea that one instrument might be better suited to a particular piece, or part, or phrase, hadn't yet been 'thunk', as Leonard Bernstein used to say. The collection that dance comes from is described on the cover as being 'suitable for instruments of all kinds'. An orchestra, rather than being a ragbag of whatever instruments happen to be handy, is based, in principle, on exploiting the differences between one kind of an instrument and another for specific expressive purposes. More than that, for specific dramatic purposes. But change was on the way, and within fifty years of that publication – less, actually – Giovanni Gabrieli, in Venice, was writing music for brass which couldn't possibly be sung, certainly not to similar effect. The age of instrumental virtuosity had dawned, and the intrinsically dramatic potential of music was beginning to be realised all over the place. And I mean that quite literally. Gabrieli was probably the first important composer to use space as a specifically musical tool.

210 Gabrieli: Canzon 12 in double echo

211 Gabrieli, breaking his brass band, as it were, into three groups and stationing each one in a different place.

By the time Johann Albrechtsberger wrote his Trombone Concerto in B flat, a century and half after that, music had changed dramatically, as you might expect; but the trombone of the 1750s was still recognisably the descendant of the sixteenth-century sackbut. Smoother, more streamlined, certainly – sounding at times, maybe, a little like a trumpet with a cold – it had a voice, as it still does, quite distinctly its own.

212 Albrechtsberger: Trombone Concerto in B flat major (finale)

213 Part of a trombone concerto by Johann Albrechtsberger.

There are several types of trombones. The one we've just heard was an alto trombone, which has since fallen largely out of favour. The commonest today, and for the last hundred years or so, is the tenor trombone, which is what we've mostly been hearing up till now. It can blare with the best of them, but in its middle range it has a certain kind of warmth to the sound which isn't far from the velvety tone of the horn.

Höser: Romance for Trombone and Organ

Part of Otto Höser's Romance for Trombone and Organ. The lowest voice in the trombone family is, unsurprisingly, the bass trombone. It's a less versatile instrument – this seems to be the perennial curse of the basses in every instrumental family – but in the right hands it can make a very memorable effect.

Berlioz: Requiem (mvt 2)

Part of the Berlioz Requiem. Now I know I said the bass trombone wasn't versatile, but that doesn't mean it's stuck with being the instrumental bullfrog we heard there. It can actually carry a tune.

214 Liszt: Hosannah

215 Part of Franz Liszt's *Hosannah* for bass trombone and organ.

It took a surprisingly long time for the trombones to find a place in the symphony orchestra, especially since they'd always been part of the standard opera orchestra. But, when they did, there was no mistaking their power. They brought a whole new dimension of grandeur to the very concept of symphonic sound. You don't have to be able to distinguish them, as such. In fact it's part of Beethoven's design in our next music that we shouldn't. They're just a part, a crucial part, of the whole sound picture. They're not soloists. They're part, if you like, of the greatest single instrument in musical history: the orchestra itself. But an orchestra never sounded like this in Mozart's day.

216 Beethoven: Symphony No. 5 (finale)

Part of the finale of Beethoven's Fifth Symphony. And that sound would not be possible without the inclusion of the trombones.

217 I can't think offhand of any work that makes a more stirring effect with trombones than the Overture to Wagner's *Tannhäuser*.

Wagner: Overture to Tannhäuser

But it wasn't just grandeur that the trombones brought to the orchestra.

218 Because of their ability quite literally to slide from one note to another, they became, in the first half of the twentieth century, a wonderful agent of satire, and mockery, and sheer high-spirited caricature.

219 Stravinsky: Pulcinella (No. 19: Vivo)

220 Stravinsky poking fun, very affectionate fun, at Pergolesi in his ballet *Pulcinella*.

Well, there was no sense of affection when Béla Bartók used the trombones (and not only the trombones) to jeer at his fellow composer Dmitry Shostakovich. A great fuss had been made about Shostakovich's so-called 'Leningrad' Symphony – a very positive fuss – and Bartók was having none of it. In his *Concerto for Orchestra* he quotes a tune from the 'Leningrad' Symphony which he thought was ridiculously trite, and then he uses the trombones, among others (and with the help of some extravagant flutter-tonguing) to blow a sequence of loud and merciless raspberries at Shostakovich, the like of which had never been heard, nor has been since.

Bartók: Concerto for Orchestra (Intermezzo)

221 And with Bartók's disgraceful show of bad manners, we take our leave of poor Shostakovich, and, for the moment, of the trombones too. In fact we now return to the French horn, this time wearing its brass hat.

The instrument itself derives in part from the traditional hunting horn, which isn't French but common to several European countries. The most important thing that all horns have in common is that they were all originally outdoor instruments. And in the horn concertos of Mozart, at least in their last movements, the spirit of that outdoor character is never very far away, even when the instruments used are modern ones.

222 Mozart: Horn Concerto No. 4 in E flat, K. 495 (finale)

Part of Mozart's Horn Concerto No. 4 in E flat.

223 The sleek, shiny, valved horns we know today are to their forbears what the Rolls Royce, and the Cadillac, and the chauffeur-driven Daimlers are to the Model A Ford. Until late in the eighteenth century the horn, hunting or orchestral, was a single, coiled bit of metal tubing, opening out at one end into a kind of bell, with a simple mouthpiece bunged in at the other end. Basically, the notes you could play on it depended entirely on how hard you blew

into the mouthpiece and what you did with your lips in the process. And the sound was never anything like as velvety and smooth, or as streamlined as it is today.

224 Rameau: Abaris ou les Boréades (Menuet)

225 Music by Jean-Philippe Rameau.

When Handel wrote his famous suite *The Water Music* for performance on the River Thames in London, there were no English horn players who could manage the orchestral horn parts properly so he had to import a couple of players from Bohemia, which boasted the best in Europe. And they can only have been delighted by the music that awaited them.

226 Handel: Water Music (Minuet 1)

Part of Handel's *Water Music*.

227 An example of the horn at its most tender, and touching, comes near the end of Stravinsky's ballet *The Firebird*. And a large part of the magic lies precisely with the scoring. Unveil the big tune with any other instrument than the horn and you'd almost have a different piece of music.

Stravinsky: The Firebird Suite (1919, finale)

228 One aspect of the horn that we haven't yet encountered is the sheer nobility of the sound they can produce when three or four of them get together. Never more so than in the opening of Wagner's *Tannhäuser* Overture.

229 Wagner: Overture to Tannhäuser (opening)

230 Like most other instruments the horn reveals a very special side of its character when played in its upper register, as it often is in this magnificent bass aria from Bach's B minor Mass:

231 Bach: Mass in B minor ('Quoniam tu solus sanctus')

232 Another distinctive voice of the horn comes from sheer weight of numbers. When Mahler uses eight of them at the start of his Third Symphony, the sound is closer to the trumpet in character than to the solo horn, with a bit of the trombone thrown in for good measure. And he also leads us very neatly into the very depths of the brass section.

233 Mahler: Symphony No. 3 (mvt 1, opening)

234 The lowest voice of the brass family comes from the tuba, much in evidence just there. And like the bassoon in the wind band and the double-bass in the strings, it has an image problem. It tends to be regarded as a bit of a buffoon. Low, ponderous, ungainly – how can it really be taken seriously, who would actually want to become a tuba player? Well, interestingly enough, tuba players tend to be humorous people. The great cartoonist and professional eccentric Gerard Hoffnung was a tuba player, and he made a recording of a Chopin mazurka arranged for four tubas. And the idea that tubas only get to play slow, ponderous music is one that we can dispose of fairly quickly, thanks to Sergey Prokofiev in his Sixth Symphony.

235 Prokofiev: Symphony No. 6 (mvt 3)

236 One of the most memorable uses of the tuba comes in the seventh of Mussorgsky's *Pictures at an Exhibition*, as orchestrated by Ravel. It depicts a lumbering ox-cart making its way down a deeply rutted country road. You can practically feel the rumbles and hear the creaks. And, as it slowly disappears into the distance, we'll take our leave of the brass, temporarily, and prepare to explore the percussion.

237 Mussorgsky, orch. Ravel: Pictures at an Exhibition (Bydlo)

Percussion

238 Since the percussion (also known as the kitchen department) embraces anything that can be struck, scratched, shaken, slapped, stroked, stamped on, typed on, or even exploded, its population is literally incalculable – as is its age. The oldest instrument of all is a pair of sticks that can be rubbed or tapped together, or a hollow log which can be hit with almost anything. Well no, come to think of it the oldest instrument of all, still flourishing all over the world, is a pair of hands that can be clapped together. Babies use these long before they can say their first word. In this next section, we'll be looking only at the percussion used in orchestras, though even here, the list will almost inevitably be incomplete. Just when you think you've got them all, Composer A will turn out to have used a fly-swatter or Composer B a punching bag. Anyway, appropriately enough, we begin with a bang.

239 **Copland: Fanfare for the Common Man**

The bass drum. Low, large, and generally hard to ignore. Unsurprisingly, it plays a prominent part in virtually all orchestral music depicting a battle.

Beethoven: Wellington's Victory, Op. 91 (opening)

240 At the opposite extreme is the triangle, which is just what it says it is: a littlish metal triangle which makes a pretty little 'ping' when you tap it with a little metal tapper. On the whole it's just used for fleeting dashes of colour, introducing a little tingling light into the atmosphere, but, in the third movement of Franz Liszt's Piano Concerto No. 1, it comes as close as it gets to a starring role.

241 **Liszt: Piano Concerto No. 1 in E flat (Scherzo)**

242 There are two basic categories of percussion: tuned and untuned. The untuned instruments, like the bass drum and the triangle, are of indefinite pitch, and there's little or nothing the player can do about it.

The side drum has a drier, harsher, more military sound than the bass drum, but hardly less attention-grabbing. The very opening of the Overture to Rossini's opera *The Thieving Magpie* makes it plain that the composer wants his audience to stop talking and listen. But even once they have, the side drum itself goes on talking.

243 Rossini: Overture to 'La gazza ladra' – The Thieving Magpie (opening)

244 Whenever there's any military reference in orchestral music, you can pretty well be certain that the side drum will be present and correct. What you certainly wouldn't be expecting, on settling down to listen for the first time to Carl Nielsen's Clarinet Concerto, is that the soloist would repeatedly be interrupted, in the first place, and by the side drum in particular.

Nielsen: Clarinet Concerto (mvt 1)

An example of bad manners, courtesy of the side drum in Nielsen's Clarinet Concerto.

245 The tambourine is a small, shallow drum, shaped rather like one layer of a cake, open at the bottom and fitted with little jingles round the wooden frame. It's held in one hand and it's one of the oldest instruments in the world. It was already old when this music was newly minted back in the 1500s.

246 Anonymous, arr. Susato: Den hoboeken dans

247 Even older than the tambourine is the originally oriental gong, which first appeared in China in the sixth century. It's long-lasting resonance is even more impressive than the sound at the moment of impact, and it's the only percussion instrument whose sound can actually swell after it's been struck. It makes a memorable contribution to the aura of orientalism in 'The Empress of the Pagodas' from Ravel's *Mother Goose Suite*.

248 Ravel: Ma Mère l'oye – Mother Goose (Laideronette)

249 And, as illustrated in Rimsky-Korsakov's *Sheherazade* and Benjamin Britten's *Peter Grimes*, no single instrument can match the gong in evoking the breaking of waves in the surf.

Britten: Passacaglia, Op. 33b from ‘Peter Grimes’

But gongs don’t have to be struck hard to be effective. Using a soft-headed drumstick, and striking them softly, produces a slightly mysterious, even magical sound which can affect the whole of the atmosphere around it.

250 Satie, orch. Debussy: Gymnopédie No. 2

251 The cymbals are generally discovered early in life, by any small child let loose in a moderately well-equipped kitchen. Two pot lids, with convenient knobs in the middle, make a tremendously satisfying clash when banged together and then quickly drawn apart again. The main difference between these and orchestral cymbals is that the orchestral ones are a lot bigger and still more resonant. And many composers have been just as enthusiastic about them as the kid in the kitchen.

Elgar: The Sanguine Fan

But the cymbals do more than clash together loudly: they can be clashed together softly.

Studio example

But they needn’t be clashed together at all. They can be struck, singly, making them into a kind of metallic drum...

Studio example

...or they can be lightly stroked by wire brushes, giving a mysterious, rather exotic but quiet sound.

Studio example

252 Other untuned percussion instruments include the highly versatile whip, whose crackings are few and far between, and are seldom repeated. I remember the first time I heard Ravel's Piano Concerto in G, I thought some poor man had dropped his umbrella on the platform just as the conductor gave the signal to begin.

Ravel: Piano Concerto in G major (opening)

But here are no fewer than twenty, cracked by Tchaikovsky in Act One of *The Nutcracker*.

Tchaikovsky: The Nutcracker (Act I, Scene 5)

253 More versatile than the whip are the wood blocks, also known as the Chinese or temple blocks...

Studio example

And the wood blocks crop up all over the place in mid to late twentieth-century American music, like the 'Hoe-Down' from Aaron Copland's ballet *Rodeo*.

254 **Copland: Rodeo (Hoe-Down)**

255 Related to the wood blocks (by sound anyway) are the castanets: a hand-held pair of wooden clackers which is so intimately bound up with the Spanish folk tradition that concert-hall composers writing Spanish-flavoured works have frequently imported it into the symphony orchestra, almost by way of a 'signature tune'. A case in point is the *Jota aragonesa* by the Russian composer Mikhail Glinka.

Glinka: Jota aragonesa

But the castanets entered the European tradition way before Glinka was even born. They were already known to, and used by, Claudio Monteverdi back in the very early seventeenth century.

256 Monteverdi: Scherzi musicali (Damigella tutta belle)

257 One of Monteverdi's *Scherzi musicali*, composed in 1607.

In fact, the castanets go back still further than that. An even earlier example comes from late in the fifteenth century, when Spanish music was already deeply nourished by the styles and instruments of North Africa and the Islamic Middle East. And the influence of Spain's centuries-long occupation by the Moors was decisive in the whole formation of truly Spanish music.

258 Traditional: Yo m'enamori d'un aire

259 When the Spanish colonised what we now call Latin America, their own instruments, and music, mixed with those of the indigenous Indians and the slaves imported from Africa. One relatively recent spin-off of this intercultural mix was the bongo drum. It's now mostly associated with popular music, but many composers, like Leonard Bernstein in *West Side Story*, have used it very effectively as part of the orchestra, along with such comparatively recent interlopers as the congas.

260 Bernstein: Symphonic Dances from 'West Side Story'

261 Well now, from the streets of New York to the smoke and heat of the blacksmith's shop, where the man himself is hammering out a red-hot horseshoe, or – more likely on the operatic stage – a sword. The anvil turns up in a crowd scene, as an extra, in *Das Rheingold* by Wagner, who specifies a crowd of eighteen anvils – quite a crowd even without the people. It crops up, too, in a number of works for the concert hall, including the third symphonies of Aaron Copland and Arnold Bax, and Sir William Walton's choral extravaganza *Belshazzar's Feast*. But the most famous example, by far, is the well-named 'Anvil Chorus' from Verdi's opera *Il trovatore*.

Verdi: Il trovatore ('Anvil Chorus')

262 Well, our next instrument, if you can call it that, is one of the most exotic, and humble, of all visitors to the orchestra: the coconut. Break it in half, scoop out the meat, so-called, and bang together the empty halves of the shell, and you have a handy stand-in for the clip and the clop of a horse's hooves.

Grofé: Grand Canyon Suite (On the Trail)

Part of Ferde Grofé's *Grand Canyon Suite*.

But the coconut has also been used by serious composers in 'pure' as opposed to representational works. And Edgard Varèse was only one of them, though he uses it far more discreetly.

Varèse: Arcana

263 Well, to finish this little tour of the untuned percussion, we turn from one vegetable, or what you might call one ex-vegetable, to another: the humble squash, or marrow. Let it dry in the sunshine, extract the meat and seeds, replace them with something harder and noisier (buckshot, for instance), and you have that staple of Mexican popular music, the maraca. In fact, maracas, or something similar, are almost standard issue in the world of Latin American popular music generally, and in a lot of the concert music based on it. They generally come in pairs, one for each hand. And it's hard to believe that the name of the Latin American dance the 'cha cha cha' didn't come straight from the sound of the maracas.

Moncayo: Huapango

And with the sounds of the maracas mingling with their more sophisticated rivals, we'll take

our leave of the untuned percussion and turn to the much richer and more versatile family of the tuned percussion. And pride of place here, in terms of the orchestra, must go to the kettledrums.

264 With their huge, gleaming copper bowls, the kettledrums, or timpani as they're usually called, are among the most visually commanding members of even the biggest orchestra. And their voices, so to speak, follow suit.

265 **R. Strauss: Also sprach Zarathustra (Introduction)**

266 The famous opening of Richard Strauss's tone poem *Thus Spake Zarathustra*.

But the drum roll, so called, can be more effectively frightening than the big bang.

Mahler: Symphony No. 2 'Resurrection' (mvt 3)

267 In fact there's no such thing as *the* drum roll. They come in a number of sizes, and different tones of voice. They can be quite short, and soft...

Grofé: Grand Canyon Suite (Sunrise)

...and they can be long and loud.

Berlioz: Symphonie fantastique (last mvt)

268 A memorable roll from Berlioz in his *Symphonie fantastique*. One of the most exciting uses of the timpani is to retune them while the boom is still resonating. Most composers seem to like an upward glide, as Bartók does in his masterwork *Music for Strings, Percussion and Celeste*, of which this is a substantial chunk.

269 **Bartók: Music for Strings, Percussion and Celeste (mvt 2)**

270 Part of Bartók's *Music for Strings, Percussion and Celeste*.

The Russian composer Rodion Shchedrin, in his *Carmen Suite*, has his timpani take a downward turn – and this time they take the stairs.

Shchedrin: Carmen Suite (Changing of the Guard)

The timpani are tuned instruments, and, as we've just heard, the tuning can be changed during the life of a single note. But the range is still very limited and their potential as 'melody' instruments is pretty restricted. A really absorbing 'Sonata for Unaccompanied Timpani' would be a very tall order indeed. For truly melodic percussion the top contenders in the conventional symphony orchestra are the tubular bells, the celeste, and the glockenspiel and xylophone, which are really two different versions of the same idea.

²⁷¹ The glockenspiel is set out like a piano keyboard, but has metal bars instead of strings, and instead of being struck by mechanically activated hammers from below, the bars are struck from above with hand-held mallets, drumsticks, or whatever sort of striker the composer may require. With its cousins the xylophone, the marimba, and the vibraphone, it's the most tuneful and wide-ranging of all the tuned percussion, unless we count in the piano – which we should, since it is, after all, a hammered instrument in which every note starts at its loudest and then steadily diminishes. And just to muddy the waters still further, there's a keyboard-operated glockenspiel which is specifically required in some cases by composers including Mozart, Mahler, Ravel, Dukas, and Messiaen. The mechanism is sometimes detectable but the sound produced is still pure glockenspiel.

Shchedrin: Carmen Suite (Carmen's Entrance and Habanera)

²⁷² When Saint-Saëns wrote his instantly successful *Danse macabre* in 1874, the xylophone was so new that he had to explain in a note what it was. By the time he wrote *Carnival of the Animals* in 1886, though, it was already familiar.

273 Saint-Saëns: The Carnival of the Animals (Fossils)

274 The mysteriously named ‘Fossils’ from *The Carnival of the Animals* by Saint-Saëns. And now a very different use of the same instrument from Ravel’s *Mother Goose*.

275 Ravel: Ma Mère l’oye – Mother Goose (Laideronette)

276 The lowest pitched of the xylophone family is the beautifully named marimba; the name, like the instrument, originated in Africa. As well as being lower in pitch the marimba has a softer, mellower tone than the xylophone.

Shchedrin: Carmen Suite (First Intermezzo)

277 The most recent addition to the family, the vibraphone, is probably more familiar in jazz than in the orchestral repertoire, where its sound is so gentle that it can be hard to distinguish it individually. Not so, though, in this music by Max Steiner for the classic Hollywood film *The Treasure of the Sierra Madre*.

278 Steiner: The Treasure of the Sierra Madre (Narange dolce)

279 And now the vibes, as they’re known, in music of a very different tradition. This, again, is from the *Carmen Ballet* by the very Russian Rodion Shchedrin.

Shchedrin: Carmen Suite (Carmen’s Entrance and Habanera)

And a little later the vibes come back with the same tune, but this time in the company of the marimba, and between them they seem to add a new dimension to the sound.

Shchedrin: Carmen Suite (Carmen’s Entrance and Habanera)

280 Since it's tuned and laid out more or less like a piano, and since it's played with two sticks, the Hungarian cimbalom sounds in theory like a close relative of the xylophone family. But instead of tuned bars it has piano-like strings which are directly struck by the player. And it's an essential part of any self-respecting Hungarian gypsy band.

281 **Traditional: Folk Dances**

282 The cimbalom has been used many times by Hungarian composers in works for the orchestra, never more famously than in Zoltán Kodály's *Háry János*.

283 **Kodály: Háry János Suite (mvt 3)**

284 Provided they don't sound too much like a doorbell, the aptly named tubular bells can introduce a wonderfully colourful and immediate element into the overall sound picture. A case in point is this little movement, again from Kodály's *Háry János* Suite.

285 **Kodály: Háry János Suite (Viennese Musical Clock)**

286 And for a more 'up-front' approach we can turn to the ever-reliable Rodion Shchedrin.

287 **Shchedrin: Carmen Suite (Introduction)**

288 But the bells can also make the sinister even more sinister, as in Vaughan Williams's *Sinfonia antartica*.

Vaughan Williams: Symphony No. 7 'Sinfonia antartica' (mvt 1)

289 By far the smallest of the truly melodic percussion instruments is the sweet-toned celeste, or celesta as it's sometimes called. And the man who made it famous, virtually overnight, was a magician named Tchaikovsky.

290 **Tchaikovsky: The Nutcracker (Dance of the Sugar Plum Fairy)**

²⁹¹ Magic, time after time. In terms of ingenuity, of imagination, and the sheer rightness of the musical thought behind it, one of the most magical uses of collective percussion, for my tastes, comes in Percy Grainger's arrangement of Ravel's piano piece *La Vallée des cloches*.

²⁹² **Ravel, arr. Grainger: Miroirs (La Vallée des cloches)**

²⁹³ Ravel's *La Vallée des cloches*, arranged by Percy Grainger.

The history of plucked instruments – what I call the ‘undercover percussion’ – goes back a long way, a lot further back than the Ancient Greeks. And probably from the beginning it was also the story of accompanied song – which of course it still is. And plucked instruments were among the lynchpins of the earliest bands which could even vaguely be called orchestras. But I never know quite how to classify them. They have strings, but are not classed as a string instruments, and since the strings are plucked not struck they're not classed as percussion either. But if we go by the sound produced, not by the means of producing it, we have, as with the string pizzicato, the effect of a percussion instrument: every note starts at its loudest and then steadily diminishes. And once a note has been sounded, there's very little that players can do to affect it.

Shchedrin: Carmen Suite (Scène)

²⁹⁴ Perhaps the queen of the ‘undercover percussion’ is the harp, whose origins lie back in the mists of prehistory. It didn't play a very historic role during the Renaissance and the Baroque, not even in the Classical era either, actually, but it's hard to imagine how the Romantics could possibly have done with out it. Tchaikovsky, for instance:

Tchaikovsky: The Nutcracker (Act II, No. 1: Scène)

The most frequent use of the harp in the orchestra is not as a soloist but as an integral part, more or less embedded in the general instrumental fabric, so to speak: as here, in Liszt's *Hungarian Rhapsody* No. 1.

Liszt: Hungarian Rhapsody No. 1

295 Just as important as the harp in the story of the orchestra – well, for a long time it was very much more important – is a close relative, what I think of as the king of the ‘undercover percussion’: the harpsichord. Though Bach was the first composer to promote the orchestral harpsichord to the status of a soloist (this in the Fifth of his so-called ‘Brandenburg’ Concertos), it retained its traditional role for some decades after his death back in 1750. Traditionally the orchestral harpsichordist was an important but highly discreet member of the band, playing the bass line with the cellos (and/or the double-bass) and filling in the harmonies above it, providing what we call the continuo, as in this movement from the Second ‘Brandenburg’.

296 **Bach: Brandenburg Concerto No. 2 (slow mvmt)**

297 By the time Bach wrote that music the harpsichord’s days were numbered – in and out of the orchestra. The agent of its doom was a new-fangled contraption which came to be called the piano. And since the last third or so of the nineteenth century it’s been the biggest, potentially the loudest, and certainly the most wide-ranging of all tuned percussion instruments. It soon became the favourite soloist for concertos, but the first major symphonic work to incorporate it into the orchestra as a whole, and without any solos, was the Symphony No. 3 by Saint-Saëns.

Saint-Saëns: Symphony No. 3 ‘Organ’ (mvt 3)

A quarter of a century after that was written, Stravinsky, taking full advantage of the piano’s percussive nature, gave it unprecedented prominence in his ballet *Petrushka*.

298 **Stravinsky: Petrushka (Russian Dance)**

299 And with that, the gloves were off. After a hundred years or so of personifying the Romantic movement in music, the piano became widely used by orchestral composers precisely for its percussive qualities. An exhilarating, though intermittent, case in point is the very substantial last movement of Bartók's *Music for Strings, Percussion and Celeste*.

300 **Bartók: Music for Strings, Percussion and Celeste (last mvt)**

Interlopers

301 When it comes to keyboard instruments as integral parts of the orchestra, one stands out in power and range above all the others. In fact it can drown out many orchestras, and part of its excitement in the context of a symphony is precisely that power.

302 **Saint-Saëns: Symphony No. 3 'Organ' (finale)**

303 The organ. In Handel's day, back in the middle of the eighteenth century, orchestras were very much smaller than today's symphony orchestras, and so were the organs he used with them. There was never any question of anyone being drowned out.

304 **Handel: Organ Concerto in B flat, Op. 4 No. 3 (last mvt)**

305 A movement from one of Handel's organ concertos. Now, the organ, like the harp, is a difficult instrument to classify. In terms of its operation it's a keyboard instrument, but in effect it's a wind instrument – in fact a whole wind orchestra – and many of its pipes were specifically modelled on individual wind instruments: the oboe, the flute, the trumpet, and so on.

306 An organ-related instrument, found in the folk traditions of most European and middle-eastern countries, has not only found its way, very occasionally, into the orchestra, it's had whole concertos written for it.

307 Boismortier: Concerto pour Zampogna (last mvt)

308 The bagpipes, in a concerto by Boismortier. In fact, back in the eighteenth century, particularly in France, there was quite a vogue for the bagpipes. It was part of a widespread epidemic of what you might call peasant-fancying. But there were some so-called ‘working-class’ instruments which were invented too late for the peasant-fancying French of the late eighteenth century. You can be sure though that if the harmonica, or ‘mouth organ’, had been around back then, it would have entered the orchestra, or at least appeared with it as the soloist in a concerto. Well, as it turns out, that’s just what happened to it in the United States a century and more later.

309 Claude-Michel Schoenberg: Les Misérables (Drink with Me)

310 Since the latish eighteenth century many instruments and artefacts, originally designed for very different purposes, have been drafted into the orchestra not for purely musical reasons but because of their associations with aspects of what non-musicians tend to call the ‘real world’. Sleigh bells, for instance, laid on here by Mozart in one of his most enchanting German Dances: you can almost feel the snowflakes.

Mozart: German Dance, K. 603 No. 3

311 It’s amazing how quickly and vividly those so-called ‘external’ associations can work, even if you’ve never actually experienced the real thing which they’re supposed to be illustrating. Mahler’s sleigh bells at the beginning of his Fourth Symphony – and they’re only there for a few seconds – establish a particular mood, a particular climate of feeling, which no ‘proper’ orchestral instrument could possibly do, certainly not so quickly.

Mahler: Symphony No. 4 (opening)

312 In two other symphonies Mahler also used cowbells – and here it wasn't just the sound of the bells themselves that he was after, but something more random than the regular, predictable rhythm of a horse-drawn sleigh. You couldn't put a metronome to a herd of grazing cattle, any more than you could effectively conduct them.

Mahler: Symphony No. 6 'Tragic' (mvt 1)

313 And, since we're on the subject of extra-musical imports, a brief roll-call, now, of some more unusual guests who've been welcomed into the orchestra; though it'll come as no surprise that they're... infrequent visitors. One is that now dimly remembered contraption, the office typewriter.

Leroy Anderson: The Typewriter

Part of Leroy Anderson's *The Typewriter*.

Now, I don't want to get in trouble with the French, but it would seem, on purely orchestral evidence, that in Paris typists are rather less musical, or at least less neatly rhythmical.

Satie: Parade

Part of Erik Satie's *Parade*. A dangerous place to be, especially for a secretary. She might get fired – that's an occupational hazard – or worse yet, fired *on*.

Satie: Parade

314 Now, if that gunman is arrested, and imprisoned, he may be put in chains. And the orchestra can provide those too. Janáček and Schoenberg both used them in major works, and Edgard Varèse includes them as surrogate drumsticks in his orchestral *Intégrales*.

Varèse: Intégrales

But if our Parisian gunman were to escape from jail and run out into the street, despite his chains, he could cause serious disruption in the Parisian traffic.

Gershwin: An American in Paris

Car horns, courtesy of George Gershwin, in his orchestral travelogue *An American in Paris*.

Now when cars collide, as they often do in cities, though often at fairly slow speeds, their paintwork can get scratched or chipped, and before it can be repainted it'll usually need a touch of sandpaper. And the orchestra can provide that too.

Leroy Anderson: Sandpaper Ballet

315 Part of the *Sandpaper Ballet* by Leroy Anderson. Well, all those oddments – typewriters, pistols, car horns, sandpaper, and what have you – all those, of course, are objects from the external world which have been brought in to an orchestral context.

But there are some pretty odd contraptions which have been purpose-built as musical instruments. Things like the wind machine, which is almost what it says it is: a machine used to create not wind itself but the sound of wind. And in what you might call ‘pictorial’ works, like the *Sinfonia antartica* by Vaughan Williams, it can be chillingly effective.

Vaughan Williams: Symphony No. 7 ‘Sinfonia antartica’ (opening)

Even before the invention of the microphone and magnetic tape, wind machines were pretty rare, and since the invention of recording you’d have thought they’d vanish from the scene altogether, but no. Vaughan Williams didn’t compose his *Sinfonia antartica* until 1952, well after the advent of the LP. But Richard Strauss had more excuse. His orchestral adventure *Don Quixote* was written in 1897, and, while the work wouldn’t really have suffered without it, it certainly adds to the fun of the piece as the hero imagines he’s riding through the air on a flying horse.

316 R. Strauss: Don Quixote (Variation VIII)

317 The practice of drafting into the orchestra instruments which aren't normally part of it had – has still – a great appeal to composers who want to put a national or nationalistic stamp on their music. A natural starting point is to import instruments which play a major part in the folk music of whatever country you want to evoke. Just off the top of my head I think of the guitar for Spain – and, beyond that, of a specific work which is statistically the most popular concerto written in the entire twentieth century.

Rodrigo: Concierto de Aranjuez (finale)

318 Part of Rodrigo's *Concierto de Aranjuez*. And then of course there's the guitar's poor American relative, the banjo.

Seeger/Hays: Washington Breakdown

319 And poorer still, the mouth organ.

Steiner: The Treasure of the Sierra Madre (Packing Up)

320 And the balalaika for Russia,

Prokofiev: Romeo and Juliet (Act II: No. 14)

321 ...the maracas for Mexico,

Sanchez: The Treasure of the Sierra Madre (El Desayuno)

322 ...the bongos and the congas and a whole wealth of other drums for Africa and Central America,

Studio example

323 ...the sitar for India,

Evening Raga: Bhopali

324 ...the accordion for France (especially Paris),

Ferré: Paris canaille

325 ...the zither for Vienna,

Kárás: The Third Man (Theme)

326 ...and if you want to evoke the gypsy music of Hungary, you can always rely on the cimbalom.

Traditional: Folk Dances

327 And there's probably a score of other ones I'm forgetting at the moment, but that's a lot of variety right there. And of those, far and away the most familiar is the guitar. Though it's often been welcomed as a soloist in a concerto, it's rare for it to be incorporated into the orchestra. But it happens.

Albéniz, orch. Breiner: Rondeña

328 And as for the Russian balalaika, there are whole orchestras of those.

Traditional Russian, arr. V. Andreev: Svetit Mesiats

329 Of all the resources available to an orchestral composer, one is absolutely unique: the sound of the wordless human voice – which of course was the original musical instrument, and the purest, and the most direct. And it's with the wordless voice that we express our every emotion, throughout the months, and sometimes years, before we acquire speech. No wonder that in an orchestral context it has a greater power than any other instrument to attract and to hold our attention. And it can be an eerie experience.

Vaughan Williams: Symphony No. 7 ‘Sinfonia antartica’ (mvt 1)

Vaughan Williams again, in the *Sinfonia antartica*.

The first great composer (perhaps the first composer at all) to introduce a wordless choir into a specifically orchestral work was Claude Debussy, in his *Nocturnes* of 1897. But the reason why the piece in question, ‘Sirènes’, has stayed unswervingly in the mainstream repertoire for more than a century is not because it’s historic, but because it’s a breathtaking example of orchestral tone-painting at its most subtle.

330 Debussy: Nocturnes (Sirènes)

331 The imitation of nature has been an irresistible temptation to music makers, probably since the dawn of prehistory. In fact it may be that it was the other way round: that music came into being through the imitation of nature. Not that anything’s quite that simple, but with the imitation of birdsong, of catcalls, of wolves’ baying, it’s safe to assume that that sort of thing was part of the daily bread of early hunter-gatherers. And the imitation of birdsong in particular has been almost an obsession with many composers. And there are no prizes for guessing which bird has proved the most irresistible, in one century after another.

332 Saint-Saëns: The Carnival of the Animals (The Cuckoo)

333 The clarinet as cuckoo, in *The Carnival of the Animals* by Saint-Saëns.

Well, if the cuckoo is the most imitated of all birds, the instrument most used to evoke the world of birds in general is the flute.

334 Saint-Saëns: The Carnival of the Animals (The Aviary)

335 ‘The Aviary’, again courtesy of Saint-Saëns.

Well, we’ve now had the clarinet doing an exact imitation of the cuckoo, and the flute giving us a more abstract impression of birds generally – in this case, I think, conjuring up a visual impression of birds in flight rather than evoking birdsong. In Prokofiev’s wonderful

tale *Peter and the Wolf*, we get an interesting cross between the two, plus a new element: the very sound of the oboe, here, captures the tone of voice rather than the actual quacking of a duck.

336 Prokofiev: Peter and the Wolf (The Duck)

337 With the advent of recording, some composers, most famously Ottorino Respighi, traded imitation for reality, or at least the recording of reality. But does it work as well?

338 Respighi: The Pines of Rome (The Pines of the Janiculum)

339 In 1972 the Finnish composer Rautavaara went Respighi one better – well, a lot more than one better – by writing a whole ‘Concerto for Birds and Orchestra’. And this was no simple cut-and-paste job either. It’s a meticulously thought-out piece, in which the recordings have been carefully selected, edited, distorted, and deployed – on thoroughly musical principles. Among the soloists are numerous marsh birds from within the Arctic Circle, and a flock of migrating swans.

340 Rautavaara: Cantus arcticus – Concerto for Birds and Orchestra (mvt 2)

341 But it’s not only relatively minor composers who’ve turned their ears to the trees, as it were. We’ve already heard Vivaldi doing it in *The Four Seasons*; Haydn couldn’t resist it in his oratorio *The Seasons*; and Beethoven, in his *Pastoral Symphony* gives us three birds for the price of one: the inevitable cuckoo, the almost inevitable nightingale (though it’s an awful lot harder to get that one right), and the quail.

342 Beethoven: Symphony No. 6 ‘Pastoral’ (Andante molto mosso)

343 Now, on the face of it, a donkey and a cuckoo would seem to have little in common – until you compare the sounds they make. They’re really two versions of the same song. But while poets, and composers, wax lyrical about the song of the cuckoo in springtime, they turn a

deaf ear to the donkey – except for two. Saint-Saëns, in *The Carnival of the Animals*, pays his tribute by entrusting the portrait to the greatest songsmiths in the orchestra, the violins. But they just can't resist being a little too musical for their subject.

344 Saint-Saëns: The Carnival of the Animals (Persons with Long Ears)

345 We get a more robust donkey portrait from Felix Mendelssohn in his Overture *A Midsummer Night's Dream*. This is a hee-haw to be reckoned with.

346 Mendelssohn: Overture to 'A Midsummer Night's Dream'

347 Unsurprisingly, most nature-imitation in music is basically that: imitation. Imitations of sound. Be it birds or donkeys or winds or babbling brooks. But this – though it does quite unmistakably depict a thunderstorm – this is something else:

348 Beethoven: Symphony No. 6 'Pastoral' (Allegro–Allegretto)

349 The fourth movement, and a bit of the fifth, from Beethoven's *Pastoral* again. But though the thunderclaps were clear enough, that amazing movement hardly imitates anything. What it depicts – though even that word isn't quite right – is not that phenomenon of nature which we call a thunderstorm, but our own, human experience of a thunderstorm. Wind and rain don't actually sound like that (and just think, by the way, how much the stature of that music would be diminished if it used a wind machine). But they feel like that. So we've moved almost completely away from imitation. Nor would we be right in saying that the greatness of Beethoven's storm is all in the music. Because the self-same notes played on the piano wouldn't pack anything like the same wallop. No. The full impact of that storm depends for its overwhelming effect on Beethoven's instrumentation – his *orchestration*. And I'm half prepared to bet dollars to doughnuts that no matter how many times you listen to that movement, you'll hear something new in it every time. That's part of a definition of great music. It's also part of a definition of listening. By now we're well past just recognising

instruments. And you can further sensitise your understanding of these instruments and groups by asking yourself, on your umpteenth rehearing of that movement, ‘How would this passage sound if it were played by the brass instead of the winds? Or the winds instead of the strings? How would it affect the nature of our experience of it? How much is our musical perception affected by the quality of instrumental colour in any given passage?’

As the beginnings of an answer to these questions, here’s what, for me, is the most fascinating of all the pieces in *The Carnival of the Animals*. Fascinating not only because of its bewitching effect but because it portrays one family in the animal kingdom which is completely mute, so there’s absolutely no sound to imitate – only the silent movement of fish, in the water.

350 Saint-Saëns: The Carnival of the Animals (The Aquarium)

351 Muted strings, two pianos, and the occasional glint of light from the flute and clarinet, adding up to what for me is pure magic.

Well, since we’ve already met most of the animals in Saint-Saëns’ carnival, I thought we might end this particular chapter of our voyage with the finale of a masterpiece which Saint-Saëns, for some unfathomable reason, suppressed during his lifetime.

352 Saint-Saëns: The Carnival of the Animals (finale)

The Orchestra

STRINGS

353 Having now met all the instruments of the orchestra individually, the time has come to put them together, first in separate families and finally as member states of the greatest of all instruments, the orchestra itself.

And we begin with the collective kings of the orchestra, the violins. Since every new strand, every new combination, changes the sound, and since all instruments are born conversationalists, we'll be following an additive approach, since it takes practice to keep track of even two melodic lines, let alone four or five. And in music, as compared with speech, many voices can speak at once without a hint of chaos. They keep their own individual identities while combining to make an altogether new kind of sound.

The greater the difference in sound between the participating instruments, the easier it is to keep track of the various strands which they weave together. In the case of the violin and the piano, for instance, the two instruments are so different that it's virtually impossible to tell them apart. But when two violins converse they produce virtually identical sounds. So it's only the two contrasting melodies which distinguish one from the other.

354 **Bartók: Forty-four Duos (No. 4)**

355 One of Bartók's Forty-four Duos for two violins.

When the violin converses with the viola there's a new element of contrast. More than one. We now have two different levels of pitch – the viola's voice goes well below the violin's – but also two different characters of sound. We heard that near the beginning of this journey. What we didn't hear then was their combination. So? Over to Mozart:

356 **Mozart: Duo for Violin and Viola in B flat major, K. 424 (finale, Vars 1 & 2)**

357 Music from one of Mozart's great duos for violin and viola.

When we add the far deeper-toned cello to the mix we arrive at the standard string trio, this time courtesy of Schubert.

358 **Schubert: String Trio in B flat (Menuetto)**

359 Part of a string trio by Schubert.

When we now add not another instrument but another part, another melodic strand, this time taken by a second violin, we have an instrumental group: the string quartet, which has been the very bedrock of the chamber-music repertoire from the middle of the eighteenth century to our own time.

360 **Beethoven: String Quartet in F, Op. 18 No. 1 (mvt 3)**

361 And that was Beethoven, from his Op. 18 No. 1.

Now, when we expand the group still further, from a quartet to a quintet, we have two choices – the composer has two choices – which will make a significant difference to the overall sound. The usual thing is to add a second viola. So we now have two violins, two violas, and a cello: a warm, well-nourished, rather smoother sound than we tend to get from the string quartet.

362 **Mozart: String Quintet No. 5 in D, K. 593 (Adagio)**

363 Part of Mozart's String Quintet in D.

When the fifth instrument is a cello, the whole balance shifts, with the lone viola holding the middle ground and the extra cello adding a far greater depth to the sound. Somehow a two-cello quintet actually sounds bigger than a two-violin quintet.

364 **Schubert: String Quintet in C (mvt 3)**

365 And no-one ever wrote a greater quintet than that – part of Schubert’s two-cello Quintet in C.

But for sheer richness of sound, the string sextet is hard to beat. We now have two violins, two violas, and two cellos.

366 **Brahms: String Sextet in B flat (mvt 2)**

367 Brahms, in his B flat String Sextet.

For some reason, composers seem to have chosen to bypass a seventh string instrument and to go next to the string octet: the standard string quartet times two. And no-one ever wrote a better one than the great Octet in E flat by the sixteen-year-old Mendelssohn.

368 **Mendelssohn: Octet in E flat, Op. 20 (mvt 1)**

369 As far as chamber music for strings goes, the octet seems to have been the limit. But double the string octet and you get a fully fledged string orchestra. And Mendelssohn wrote for that as well, only in this particular case he was only twelve.

370 **Mendelssohn: String Symphony No. 2 (finale)**

371 Part of the *String Symphony* No. 2 by the twelve-year-old Mendelssohn.

Well, of course there are string orchestras and string orchestras. The one Ralph Vaughan Williams wrote for in his great *Fantasia on a Theme of Thomas Tallis* was very substantially bigger than Mendelssohn’s. No mere chamber orchestra, this, but the complete strings of a large symphony orchestra. A hugely expanded string quartet this may be, but the sound isn’t just bigger. There’s a depth, grandeur, and nobility to the sound itself which is far beyond the scope of any chamber music. This is truly symphonic:

372 **Vaughan Williams: Fantasia on a Theme of Thomas Tallis**

THE WIND ENSEMBLE

373 Well, there are the strings sorted out. We'll be back with them awhile later, but now it's the turn of the woodwind.

These are easier for the ear to distinguish from one another, because unlike the strings, which are all the same kind of instruments, each of the woodwind, as we heard earlier, has a very distinctive, individual sound. And the best way to meet them, in terms of sharpening your ears – well, sharpening your listening – is in a Theme and Variations. Why? Because there we find a series of short, self-contained pieces, in which the limelight is generally shared equally between all the players, in succession. A case in point is the set of variations by Antonín Reicha, of which this is the theme:

374 **Reicha: Wind Quintet in A minor, Op. 100 No. 5 (Theme)**

375 Well, there's the Theme, and in the First Variation it's the horn that gets the lion's share.

376 **Reicha: Wind Quintet in A minor, Variation 1**

377 In Variation Two the torch is handed to the bassoon, which gets a discreet – a very discreet – accompaniment from the other four.

378 **Reicha: Wind Quintet in A minor, Variation 2**

379 In Variation Three the accompaniment doesn't need to be so discreet, since the others know perfectly well that the oboe can look after itself. Of all the woodwind, the oboe has the sharpest, most penetrating tone.

380 **Reicha: Wind Quintet in A minor, Variation 3**

381 Variation Four breaks the pattern by pausing for general conversation before returning to a solo-dominated texture.

382 **Reicha: Wind Quintet in A minor, Variation 4**

383 And Variation Five is dominated by the clarinet.

384 **Reicha: Wind Quintet in A minor, Variation 5**

385 The next to be featured is the flute, whose virtuosity is matched by the most active accompaniment we've had so far.

386 **Reicha: Wind Quintet in A minor, Variation 6**

387 And now, in the best tradition of the curtain call, the players end the piece by taking their individual bows in sequence: first the horn, then the clarinet, then the bassoon, then the oboe, and finally the flute, before all of them link hands, figuratively speaking, and bring the movement to its collective close.

388 **Reicha: Wind Quintet in A minor, Variation 7**

389 Well now, only one step away from the symphony orchestra proper, to another, larger chamber work, this one for a mixed instrumental grouping: clarinet, bassoon, and horn, plus string quartet and a double-bass. Double this, with two instruments to a part, and what you'd get... is an orchestra.

390 **Schubert: Octet in F (mvt 3)**

Music from Franz Schubert's Octet in F.

THE CLASSICAL SYMPHONY ORCHESTRA

391 With the combining of wind instruments and the fully fledged string orchestra we come to the very heart of the classical symphonic tradition. We've arrived at the first embodiment of the true symphony orchestra. Trumpets and drums were optional extras; a battery of brass and percussion were to come later. But with the strings and wind alone, Mozart and Haydn

built on the work of their predecessors and created the symphony as the highest manifestation of musical art in their time. And they had fun, to boot.

392 Mozart: Symphony No. 29 in A, K. 201 (finale)

393 Part of the last movement of Mozart's Symphony No. 29. And there we have strings and wind united in perfect harmony.

THE BRASS ENSEMBLE

If we count the horn as one of the woodwind, which Mozart did, the only member of the brass family usually included in the orchestras of Mozart, Haydn, and the younger Beethoven is the trumpet. The fully fledged brass section, which was a staple of the Romantic orchestras, didn't exist yet, but the independent brass ensemble had existed long before Mozart and Haydn were ever born.

394 Gabrieli: Canzon 28

395 Music by Giovanni Gabrieli.

One reason why Mozart and Haydn didn't think to include a proper brass section in their symphonies is that between the beginning of the sixteenth century and the middle of the eighteenth, the brass consort itself had gone so far out of favour that it might just as well have become extinct. But what happened between Mozart's last symphony (of 1790) and Beethoven's Fifth (a mere sixteen years later) amounts almost to an instrumental revolution. In Mozart's last (the 'Jupiter') the only brass are two horns and two trumpets, with the horns siding more with the winds than the brass. In Beethoven's First it was hardly different. But in the Fifth he asks for two horns, two trumpets, and three trombones (that's in addition to full strings, double winds, two contra-bassoons, piccolo, and timpani).

396 **Beethoven: Symphony No. 5 (finale)**

397 The closing moments of the Beethoven Fifth. Well, if that sounds big and blary after Mozart, it looks like the merest chamber music compared with Beethoven's last symphony, where the troops now include two horns, two trumpets, three trombones, full strings, double winds, two contra-bassoons, piccolo, cymbals, and timpani, plus four vocal soloists and a four-part mixed chorus.

THE ROMANTIC SYMPHONY ORCHESTRA

398 Beethoven changed the face of the symphony, and of the orchestra, forever. And his example haunted the whole of the nineteenth century. Schubert, Schumann, Liszt, Berlioz, Brahms, Wagner, Bruckner, Mahler, and to a certain extent Richard Strauss were all in one way or another obsessed with him. By the early years of the twentieth century Mahler was writing for forces which included, as well as a large body of strings, piccolo, four flutes, four oboes, cor anglais, five clarinets, bass clarinet, four bassoons and one double-bassoon, eight horns, – not finished yet! – six trumpets, four trombones, tuba, and a huge armoury of percussion.

399 **Mahler: Symphony No. 6 'Tragic' (mvt 1)**

400 Part of Mahler's Sixth Symphony. A very large orchestra indeed, but not his largest. If we had more time, I'd read you a list of the forces required for his Eighth Symphony, but since it takes roughly forty seconds just to read, we'd better press ahead.

The cult of orchestral elephantiasis which Beethoven unwittingly unleashed reached its peak, nice and symmetrically, exactly a century after his death. And for this one, too, I'm going to have to bypass the details, because the so-called *Gothic Symphony* by the English composer Havergal Brian, completed in 1927, calls for 126 instruments – not including the strings, one children's choir, two large double choirs, some small chains, a bird-scarer, a thunder machine; but including four brass bands, each one comprising two horns, two trumpets, two trombones, two tubas, and two sets of timpani.

401 Brian: Symphony No. 1 ‘Gothic’ (VI: Te ergo quaesumus)

402 Part of Havergal Brian’s truly gargantuan *Gothic Symphony*.

NEW WINE IN OLD BOTTLES

By 1927, when that was completed, the orchestra had got as big as it was ever going to get. But if the orchestra itself had effectively reached the end of the road in terms of sheer growth, ways of using it hadn’t – and still haven’t. And large doesn’t necessarily mean loud. Debussy, for instance, often used a very big orchestra indeed, but he used it as a reservoir of colours, such as painters might mix on their palettes, or even on the canvas itself. Sometimes an instrument may speak only once or twice, like a brief glint of sunshine on some shiny surface, and then disappear from view, as it were. In the piece called ‘Gigues’, the trombones appear in only fourteen bars out of a total of 235, and in eight of these they play very quietly. It often happens in Debussy that instruments which are traditionally regarded as loud – well, the trombones are a good example – are used for the most delicate shadings, and sometimes for nothing else. Debussy was one of the subtlest orchestral painters who ever lived.

403 Debussy: Images (Gigues)

404 If you stop to think about it, a painting – almost any painting up until the twentieth century – has many, many more individual colours, many more shades and textures than the number of instruments there are in even the largest orchestra. The price for many players in a lot of Debussy’s orchestral music is that they may spend most of their time on the platform doing nothing but listen. If that. One famous player used to have a popular mechanics magazine opened on his music desk, on top of the score. He just had to make sure he never missed his cue, and that the conductor wouldn’t spot him turning the pages.

In the mid-to-late twentieth century, music in the West weathered a real crisis of

confidence. The gulf between many composers and most music lovers widened to an unprecedented and disturbing extent. It was thought in some circles that the orchestra as we know it had had its day. It would continue to play music of the past, to be a kind of living museum, but as far as present and future composers were concerned it would wither on the vine and die. The whole concept of what an orchestra *is* was called into question. And many alternatives were explored. There were plenty of new ideas and new musical media out there, but the philharmonic societies of the world, most of them anyway, were bastions of conservatism, and the average music lover and concert-goer, beyond the big capital cities, got very little chance to hear what was actually going on in the wider musical world outside. In terms of its basic constitution, the average symphony orchestra in the 1990s was much the same as it had been in the 1890s. It's a simple fact that over the last hundred years or so the symphony orchestra has welcomed into its ranks very few new instruments. One notable exception, as we've heard, was the electrical member of the xylophone family, the vibraphone. Another was – is – the ondes martenot: an electronic keyboard instrument whose other-worldly sound and whose range are extraordinarily difficult to describe. If I say that it's a kind of cross between a disembodied human voice and a slide whistle, that's hardly adequate but it seems I'm not the only one with this problem. One well-known English conductor has described its character as being 'like a wild, penetrating, inhuman, wailing musical saw'. Anyway, it's been used by a number of composers, but it's most closely associated with the music of Olivier Messiaen.

405 Messiaen: Turangalila Symphony (Chant d'amour 1)

OLD WINE IN NEW BOTTLES

406 Ironically, the biggest recent strides in instrumental technology have been made in building better and better replicas of what we now call 'period' instruments. The biggest change, orchestrally speaking, in the last third of the twentieth century, came with the so-called 'early music' movement: a huge upsurge in scholarship which caused a revolution in the

performance of music from all eras earlier than our own. Singers had to learn a new way of singing, instrumentalists a new way of playing. But while the singers, of course, continued singing with their own voices, instrumentalists in many cases had to get hold of new instruments – new *old* instruments. They were basically learning on their feet, and to begin with it often sounded that way. Today, though, the best of them reach a standard of expertise and instrumental mastery which would probably have delighted the composers whose music they play.

407 Lully: Ballet de Xerxès (Gavotte en rondeau)

408 A gavotte by Lully, as he might have heard it himself.

BEYOND THE PAST

But, of course, whatever the benefits of musicological scholarship, the future doesn't lie in the past. And the threat from electronics to the traditional orchestra hasn't gone away. The forward march of the synthesiser and its offspring continues, and the ability to duplicate the sound of every instrument you can think of, at the mere press of a button, is not maybe so far off. In fact, given the speed of technological advance, it may be that this sort of speculation will be banished in the not-too-distant future to the sidelines of history. In the 1990s an American scientist, inventor, and musician, Dr Manfred Clynes (a pupil of the great cellist Pablo Casals, as it happens), devised what was in effect a synthesised orchestra in which the timing, duration, tone colour, volume, and articulation of every individual instrument, on any note, could be manipulated with an extraordinary combination of precision and flexibility. Walter Carlos was doing the same sort of thing half a century ago with his best-selling albums, like *Switched-on Bach*, but unlike Clynes's, his synthesiser, the Moog synthesiser, sounded as electronic as it was. Its musical potential was very great, but no musician could possibly mistake it for a real orchestra. Well, thanks to the likes of

Manfred Clynes, that gap is closing dramatically.

409 **Bach: Concerto in D minor for two violins (Largo)**

410 Manfred Clynes, interpreting Bach's Double Violin Concerto with nary an instrument in sight. And if you don't happen to like his interpretation, you can sit right down and make up your own. In fact, the day is not unimaginably distant when you can have a world-class orchestra in your own living room, made to order in the best techno-kitchens in the world, and differing from real orchestras in one important respect: you can make it do whatever you want it to do. It won't talk back, won't join a union, won't play out of tune, and never gets tired. It'll duplicate the acoustic of whatever great concert hall you want, and if you haven't the confidence to take charge of the entire interpretation you can bring in whatever great conductors you care to choose, and you can pick 'n' mix with the best of them. If you want to have Karajan for the first theme, Toscanini for the second, Previn for one phrase, Ozawa for another, go for it! Or you can attend to every detail yourself. As I speak to you in the year 2002, a lot of that technology already exists, and more is on the way. By the time you hear this it may already be old hat.

Well, this may be bad news for orchestral musicians but it may also be very good news for music, and even better news for music lovers. It doesn't invalidate any of the great interpretations of the past, but it takes the passivity out of twenty-first-century listening. It gives the listener the opportunity to become an authentic musician. And if you're worried about the isolation, just remember that the very act of listening puts you in direct touch, if you so wish it, with some of the greatest minds and spirits who ever lived, and who gave voice to experiences and emotions which are common to us all. 'Who hears music', wrote the poet Robert Browning, 'has his solitude peopled at once.'

Bach: Mass in B minor ('Dona nobis pacem')

12. *Glossary*

bass bar	a strip of wood glued to the underside of the ‘belly’ of bowed string instruments to sustain some of the pressure exerted by the tension of the strings on the bridge
bell	the bell-shaped opening-out at the end of most wind and all brass instruments, e.g. recorders, clarinets, oboes, trumpets, horns, etc.
bore	as with guns, the hollow part of tubular instruments such as the wind and brass, and the measurement thereof – thus an instrument with a straight cylindrical exterior may have a ‘conical’ bore, narrower at one end than at the other
bow	modelled on the traditional hunting bow, a curved wooden stick, with horsehair stretched between its ends, by means of which the strings of un-keyed string instruments are generally set in vibration; though this, of course, can also be done by plucking or (seldom) striking them

bridge	the supporting (and sometimes ornate) wedge or block of wood which holds the strings up from the ‘belly’ of a string instrument, enabling them to vibrate freely
chin rest	a carved wooden block clamped to the underside of the violin or viola, enabling players to grip the instrument between chin and collarbone, thereby relieving the left hand of the necessity to bear the full weight of the instrument. The name is a complete misnomer as the chin is not resting at all but bearing down on the instrument. The invention of the device is attributed to the great violinist Louis Spohr, c. 1815. A later development is the ‘shoulder rest’, which lifts the instrument away from contact with the shoulder
crook	a detachable section of tubing used to extend the length of the vibrating column of air in brass instruments, thus enabling them to play in various keys and increasing their range
damp	to radically diminish or extinguish the vibrations of a string etc. by means of external pressure
<i>divisi</i>	see ‘first violins’
double-reed	see ‘reed’
double-stopping	the playing of two notes at the same time on string instruments by drawing the bow over two strings simultaneously

first violins	the violins in an orchestra are arranged in two groups, the first violins and the second violins; thus the whole violin section is not confined to one part. Indeed the first and second violins themselves are sometimes divided (<i>divisi</i>) into two, thus creating a temporary family of four. The same sort of division is also occasionally applied to the violas and cellos
key	(1) a lever, depressed by finger or foot, to produce a specific pitch. (2) a term used to identify the particular scale on which a piece is based. Thus a piece based on the C major scale is said to be in the 'key' of C major
mute	a small weight which can be attached to the bridge of string instruments to inhibit its vibrations, producing a muffled, sweet, rather cotton-woolly sound
natural	the name referring to tubular instruments (bugles, horns, trumpets, etc.) not fitted with valves or keys, and thus being limited solely to the notes of the natural 'overtones' determined by a fixed length of tubing
reed	a vibratory sliver of cane, metal, or plastic used to set the air-column vibrating in wind instruments such as the clarinet and saxophone. Some wind instruments, such as the oboe and bassoon, use a 'double-reed', in which two such slivers, pressed together in a mouthpiece attached to the main body of the instrument, vibrate against each other

spike, or end-pin	the narrow metal rod which extends the length of a cello, thus relieving the player's knees from the job of supporting the instrument's weight
stopping	the placement of a finger on a string so as to determine that portion which is to vibrate. This technique accounts for most of the notes played on any string instrument
transposing instruments	those instruments which play pitches other than the notes indicated on the page, this purely for ease of notation. Thus the player of a B-flat clarinet will play a B-flat major scale in response to the appearance of a C major scale in the score
vibrato	a rapid, regular fluctuation in pitch, giving the note a 'throbbing' effect

13. *About the Author*

Though long resident in England, **Jeremy Siepmann** was born and formally educated in the United States. Having completed his studies at the Mannes College of Music in New York, he moved to London at the suggestion of Sir Malcolm Sargent in 1964. After several years as a freelance lecturer he was invited to join the staff of London University. For most of the last twenty years he has confined his teaching activity to the piano, his pupils including pianists of worldwide repute.

As a writer he has contributed articles, reviews, and interviews to numerous journals and reference works (including *New Statesman*, *The Musical Times*, *Gramophone*, *BBC Music Magazine*, *The New Grove Dictionary of Music and Musicians*), some of them being reprinted in book form (Oxford University Press, Robson Books). His books include a widely acclaimed biography of Chopin (*The Reluctant Romantic*, Gollancz/Northeastern University Press, 1995), two volumes on the history and literature of the piano, and a biography of Brahms (*Everyman/EMI*, 1997). In December 1997 he was appointed editor of *Piano* magazine.

His career as a broadcaster began in New York in 1963 with an East Coast radio series on the life and work of Mozart, described by Alistair Cooke as ‘the best music program on American radio’. On the strength of this, improbably, he was hired by the BBC as a humorist, in which capacity he furnished weekly satirical items on various aspects of American life.

After a long break he returned to broadcasting in 1977 and has by now devised, written, and presented more than 1,000 programmes, including the international-award-winning series *The Elements of Music*. In 1988 he was appointed Head of Music at the BBC World Service, broadcasting to an estimated audience of 135 million. He left the Corporation in the spring of 1994 to form his own independent production company.

Producer: Jeremy Siepmann

Engineer and sound editor: Michael Taylor

Recording venue: Hats Off Studios, Oxfordshire

Edited and mastered by Michael Taylor, Hats Off Studios

Cover design: MAC Graphics, using an original illustration by Hemesh Alles

All drawings by Hemesh Alles

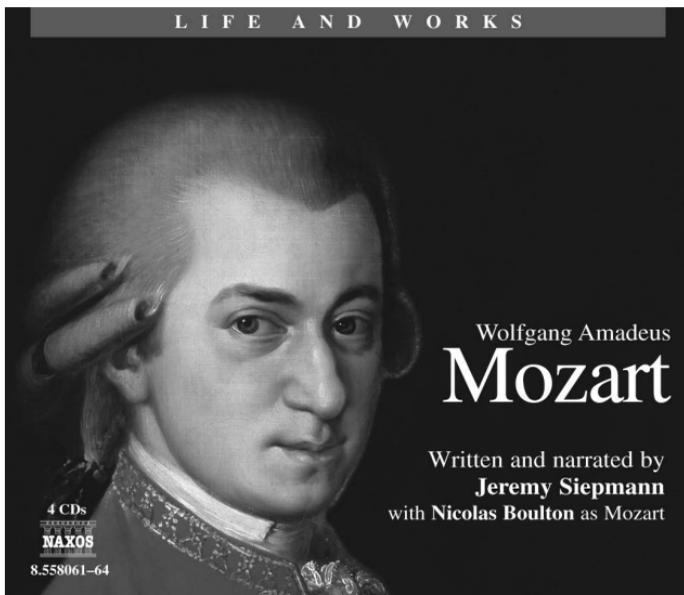
Literary editor: Genevieve Helsby

Published by Naxos Multimedia

© 2002 HNH International Ltd

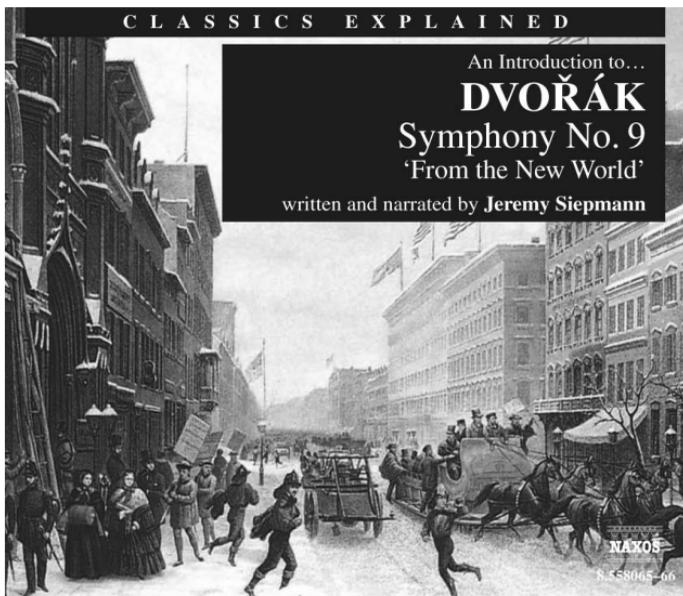
© 2002 HNH International Ltd

Also available



Life and Works
Wolfgang Amadeus Mozart
Naxos 8.558061-64

Also available



Classics Explained

An Introduction to Dvořák's Symphony No. 9 'From the New World'
Naxos 8.558065-66

THE INSTRUMENTS OF THE ORCHESTRA

Instruments *of* the orchestra, yes, but not just instruments *in* the orchestra. This is a set of portraits in depth, featuring individual instruments in many contexts (orchestral, chamber, folk, solo, operatic, cinematic, even jazz and avant-garde music) and in pieces from the Middle Ages to the present. Joining regular members are such exotic visitors as the eerie ondes martenot, the wind machine, banjos, bagpipes, coconuts, typewriters, six-shooters, taxi horns, and migrating swans – and the hundreds of examples range from illustrative snippets to entire movements. The first CD is devoted entirely to the violin, and the last to the greatest instrument of all, the orchestra itself.

Audio-Original written and narrated by
Jeremy Siepmann

7 FULL-LENGTH CDs/APPROX. 8 HOURS PLAYING TIME



COMPREHENSIVE BOOKLET INCLUDING FULL SPOKEN TEXT



A WEALTH OF ILLUSTRATIVE MUSICAL EXAMPLES

All rights reserved. Unauthorised public performance,
broadcasting and copying of these compact discs prohibited
© 2002 HNH International Ltd © 2002 HNH International Ltd

NAXOS

**Total
Playing
Time
8:01:52**

8.558040-46D

STEREO

DDD

05537

MADE IN E.C.

**www.
naxos.com**