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BOOK REVIEWS

Nick Collins and Julio d'Escriván, editors. *The Cambridge Companion to Electronic Music.* Cambridge: Cambridge University Press, 2008. xxi, 312 pp.: 8 line figures, 16 halftones. ISBN: 978-0-521-86861-7. $95.00 (hardcover). ISBN: 978-0-521-68865-9. $29.99 (paperback).

Since its origins in the nineteenth century, audio technology has evolved from a means of simply recording and documenting sound to become an integral part of musical activity. At the forefront of modern technology, the personal computer has become a requisite tool driving innovative development within increasingly convergent artistic disciplines. The ubiquity of computer-based technology and the proliferation of accessible and powerful software have created new avenues for artistic expression. In turn, this has led to a fertile and challenging environment for composers, performers, and artists alike.

The Cambridge Companion to Electronic Music seeks to encapsulate current thought defining contemporary practice of electroacoustic and computer music. Despite an underlying viewpoint based on Western stylistic and historical convention, the editors take pains to include international perspectives apropos of increasing global interaction. Thirteen individual articles are connected by a wide range of artist statements, by figures from Karlheinz Stockhausen, George Lewis, and Max Mathews to Bubblyfish, Kevin Blechdom (Kristin Erickson), and CybOrk. Inviting such diversity is much to the editors' credit, and enables them to bridge existing dichotomies between serious academic art music and popular electronica (which includes many different forms of experimentation in its own right).

Considering the vast scope of electronic music, the editors acknowledge that "[the] rapidity of advance may make writing any book impinging on contemporary topics an exponentially difficult task" (p. 2). Even so, each article is a detailed and accessible look at one specific area of inquiry. Cohesive in its framework, the collection offers the opportunity to make connections pertinent to the reader's particular interests. In light of the complexity of the field, "readers are encouraged to find their own personal tapestries of works and experiments" (p. 4). This expectation of personal exploration is supported by the successful and logical structure of the book. There is a consistent flow to reading the articles sequentially, and the reader with less experience of elec-

tronic music will gain a thorough knowledge by approaching the book this way; a reader with more experience will find detailed study of individual chapters equally rewarding. In either case, a reader will gain a picture of the current state of electronic music, colored by his or her experience (or lack thereof) with the medium.

The book is divided into three main sections. The first part, "Electronic Music in Context," describes the origins of electronic music and the histories of the studio, live performance, and computer music programming. The second part, "Electronic Music in Practice," may be the most interesting, as it relates to current performance practices and techniques. Beginning with interactive performance and algorithmic composition, the section looks outward to intermedia and real-time audiovisual performance, network music, and robotics. The third part, "Analysis and Synthesis," is perhaps the weakest, in that its three topics have the least relationship with each other. Nevertheless, it provides an excellent overview of the generation and manipulation of sound via computer, and the psychology of electronic music. The final essay, by Natasha Barrett, is entitled "Trends in Electroacoustic Music." Rather than speculating on future potential, Barrett makes subjective and thought-provoking observations about past activity, and how making music with machines is ultimately all about perception and cognition. To facilitate further research, several of the authors provide selected bibliographies and/or discographies. References are provided in detailed endnotes (all placed together, following the text), and the book concludes with a comprehensive list of articles and papers.

One engaging tapestry that emerges throughout is how the advancement and convergence of technologies has changed the conventional paradigm of creation, realization, and execution. This is evident in an awareness that a creator of electronic music is not only a composer in the traditional sense, but also potentially an instrument and performance designer. Computer music in particular long ago reached a point where the final recorded work is the ideal representation and final arbiter in matters of score, performance, and interpretation. In turn, sonic boundaries imposed by traditional acoustic instruments have been diminished, as has the composer's loss of control in entrusting the interpretation to a performer.

This raises philosophical questions as the lines between composition and performance are blurred. New forms of musical expression often demand new means of performance. It follows that designing new

sounds can also require new types of control mechanism. At the intersection of creation and realization, instruments themselves have undergone a profound transformation in the way they interface among performance gesture, control, and resultant sound.

Partially out of convenience and economic consideration, many modern controllers are based on conventional instruments and techniques. While many controllers don't generate their own sound, using them to perceive and capture physical gesture enables the gesture to be mapped onto various types of external sound sources. Today's sensor and switching technologies allow almost any kind of gesture to be detected and tracked. The ability to design and combine different types of sensors also invites the creation of innovative and alternative types of control devices. New instruments can be designed as part of the programming process and exist in a virtual state. These virtual instruments are often inseparable from the piece itself, as they can be created as part of the composition (and in most cases, the performance as well).

What remains to be seen is how one defines an instrument once it has lost its tangible qualities, and how its nature changes within a medium where a composer has complete control. In considering the conventional understanding of what a musical instrument is, the removal of direct physical control and the separation of gesture from sound may require a philosophical leap of faith. Several of the articles reinforce forward-looking acceptance that an "instrument" is primarily a vehicle for controlling the *behavior* of sound, whether by direct physical means or some other abstract or virtual mechanism.

In "Interactivity and Live Computer Music," Sergi Jordà addresses several questions of physical control. He includes concepts behind dynamic instruments that do more than passively transmit and translate control gestures. Jordà describes a variety of non-conventional controllers, which inhabit a continuum that he describes as ranging from the "*absolutely passive* conventional instrument (in which the performer is in charge of every smallest detail), to the *fully autonomous* (i.e., human-independent) performing machine" (p. 103). Jordà also describes distinct virtuosity paradigms that can coexist throughout the spectrum. These paradigms run parallel to the ideas that passive instruments require detail and precision from their performers, while interactive systems and their controllers emphasize non-linearity, the dialogue between the performer and the instrument. This dialogue often pro-

duces unexpected results, but Jordà also points out that "if nonlinearity is at first intuitively seen as a potential lack of control, it can also mean higher-order and more powerful control" (p. 105).

Jordà's article is the most immediate entry point for the reader who has an interest in physical and gestural control. Subsequent articles—particularly Stefania Serafin's "Computer Generation and Manipulation of Sounds," Nick Collins's "Musical Robots and Listening Machines," and Amy Alexander and Nick Collins's "Live Audiovisuals"—also touch upon issues of control, but the discussion takes a more holistic viewpoint by looking at the behavior and methodology of entire systems.

The Cambridge Companion to Electronic Music provides a robust view of electroacoustic practice in the early twenty-first century. One thought that seems intriguing: how might another set of writers elicit a different discovery of "personal tapestries?" As it stands, there's not much to argue with over the editors' choices, given their intent to provide the widest possible perspective of contemporary practice. Some of the finer aesthetic points that occasionally surface might be cause for debate, but the essential material is substantial and thoroughly covered. *The Cambridge Companion to Electronic Music* is a welcome addition to the literature, commendably serving to catalog a wealth of information that informs current thinking about the practice of electronic music.

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Jeffrey J. Noonan. *The Guitar in America: Victorian Era to Jazz Age.* Jackson: University Press of Mississippi, 2008. viii, 239 pp: 40 black-and-white illus. ISBN: 978-1-934110-18-8. $50.00 (cloth).

Recent years have witnessed increasing attention toward plucked string instruments such as the banjo, mandolin, guitar, and even ukulele. This attention has been manifest in publications, museum exhibitions, trade shows, and the auction house, where the most sought-after instruments can bring five- and six-figure prices. As the most popular and accessible instrument to players and collectors, the guitar holds a secure place in the number of publications devoted to it. And while a large number of these books are what might be termed "guitar porn"—works mostly filled with attractive pictures and relatively lightweight text—some very useful studies have appeared, including Noonan's *The Guitar in America: Victorian Era to Jazz Age.*

Noonan's book is not an organological examination of the guitar, but rather a thorough analysis of its musical and social role in America during the late nineteenth and early twentieth century. Drawing on the plethora of magazines issued during this period that were devoted to the trio of so-called plectral instruments (the banjo, mandolin, and guitar), Noonan presents a fascinating look at not only the music and performers of the time, but also how the magazines themselves went about promoting the sales of instruments and the business of teaching, playing, and encouraging their use to the masses.

What is made clear in this book is that the guitar greatly struggled for respect during the period under examination. Although it is difficult for most to understand nowadays, from about 1880 to 1920 the banjo and mandolin were much more popular and respected instruments than the guitar. Employed in ensembles ranging from a trio to an entire orchestra composed of plectral instruments, the banjo and mandolin usually took the melody lines, while the guitar was typically restricted to a supporting role. The guitar's struggle is abundantly played out in the pages of magazines such as *Crescendo* and *Cadenza*, two of the better-known publications discussed by Noonan. Along with dozens of other magazines (many of them short-lived), they were devoted to promoting the banjo, mandolin, and guitar, and the acronym "BMG" is used throughout Noonan's study as a shorthand for the movement that popularized their use.

The other point that becomes obvious from the author's research is that however useful it is to examine these magazines as period sources of history about the guitar, mandolin, and banjo, one has to be aware of the biases that are present. The articles they included might extol the beauties of music making, but these publications were mostly what we might term "trade journals," existing primarily to promote the business of music. Articles and editorials frequently addressed the teaching of plectral instruments, and debated whether it made sense for an instructor to teach more than one instrument; many did, no doubt because it diversified their customer base. But selling instruments was another key aim of these magazines, and the earliest one, *S. S. Stewart's Banjo and Guitar Journal*, unabashedly promoted instruments and other musical merchandise sold by Stewart's own company in Philadelphia.

The journals nonetheless bear close witness to a number of significant issues that were debated by the BMG community. Regarding the guitar, four topics were repeatedly examined beginning as early as the 1880s: right-hand fingering techniques, how to support the guitar when play-

ing, the use of steel strings, and the creation of new, hybrid instruments. Readers of this JOURNAL may take particular interest in the last two of these issues, as they bear directly on the production of actual musical instruments. Another intriguing issue frequently examined by the contributors to these magazines is the guitar's musical pedigree and how its stature matched up (or did not) to that of the banjo and mandolin. On the one hand, the guitar was often linked historically to the lute, and portrayed as an instrument with great powers of expression and romance. As such, the writers often described it as well suited to female players and to men who were of "Latin" ethnicity (i.e., Spanish and Italian). But these same things somehow made the guitar suspect as a "serious" musical instrument. (The banjo was considered vastly more sophisticated in this period.) Race was sometimes brought into the fray as well, as the guitar (especially when played with steel rather than gut strings), was seen as an inferior instrument in the hands of African-American players. Yet another intriguing theme, showing that some things never change, is that playing one of the BMG instruments was promoted as a way for men to meet women. Although, in fairness, the instruments were likewise promoted as a way for women to meet men. All in all, this simply underscores the social benefits of belonging to a musical ensemble during the period, as the country was littered with BMG clubs of all sizes, many affiliated with colleges and universities.

Although the author is focused on the guitar as the main subject, there is ample discussion of the banjo and mandolin as well. This study holds very useful information for the scholar of any of these instruments, and for social historians, those involved in gender studies, and anyone who wants to learn more about the business of music in a period when some of the popular forms of the twentieth century were taking root. Combing through all of these magazines was surely a time-consuming process; it would be great if more of them could someday be digitized to make them more accessible to a wider group of researchers, including those not directly involved in the study of music history. (*S. S. Stewart's Banjo and Guitar Journal* is available in online facsimile at https://urresearch.rochester.edu/handle/1802/2586.)

Overall, this is a well-produced book. But its origins lie in Noonan's 2004 dissertation from Washington University in St. Louis, and the prose sometimes has the dry flavor of a dissertation rather than the more compelling story that might have been presented. It would have benefited from slightly tighter proofing and copyediting, as there is a fair amount

of repetition (in chapters 2 and 3, for example). As to statements that actually seem questionable, there are extremely few. Chief among these is Noonan's use of the term "New England" (pp. 29 and 33) to describe a region that apparently includes not only Boston, but also New York City and Philadelphia. This may have seemed permissible to the author when contrasting the East Coast to the Midwest, but it is a considerable stretch of this traditional geographical term. Also slightly troubling is Noonan's failure to make much more clear in the body of his text that up until about 1820 the term "guitar" in America nearly always referred to a type of cittern, familiarly known as a "guittar" or "English guitar." He eventually spells this out relatively clearly, but his indiscriminate use of the word guitar on pages 8 through 11 without better clarification could prove confusing to an uninformed reader. In any event, the cittern and its use in America would seem to have little bearing on what happened later with the normal or "Spanish" guitar, and this issue too could have been made clearer. One other unavoidable problem is that many of the book's illustrations, taken from the period magazines examined, are understandably grainy and striated.

One wonders if we will ever see a renewed interest in re-creating the sounds of the BMG ensembles that held such sway in America at the turn of the century. The instruments are certainly available (if sometimes pricey), as is the talent to play them. In all honesty, though, many of today's players of plectral instruments are somewhat unversed in reading musical scores and playing in the tight fashion required to make such ensembles musically viable. And then there's the music itself, which would likely sound rather staid and uninteresting to most modern ears. But should anyone wish to learn more about this important period in the development of BMG instruments, Noonan's book is an excellent starting place.

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Marie-Anne Sarda, editor. *Le Vielleux: Métamorphoses d'une figure d'artiste du XVIIe au XIXe siècle*. Lyon: Fage éditions, 2008. 144 pp.: 147 color illus. ISBN: 978-2-84975-142-8. €25,00 (paper).

From July 5 to October 5, 2008, the Royal Monastery of Brou in the city of Bourg-en-Bresse in southeastern France, not far from Lyon, mounted an exhibit entitled *Le Vielleux: Métamorphoses d'une figure d'artiste du XVIIe*

au XIXe siècle. While there have been extensive exhibitions devoted to the *vielle à roue* or hurdy-gurdy in previous years (notably at the museum in Montluçon, whose extensive collection is in storage now that the museum has devoted itself to collecting guitars), and the Musée de la musique in Paris displays a considerable number of fine examples (and lent several to Brou for the occasion), this exhibition attempted to create a broader cultural context by highlighting the image of the players and the way in which this image changed over three centuries. Marie-Anne Sarda makes clear in the introduction to the catalog that the starting point is art history rather than organology. Nevertheless, twenty-two instruments from the three centuries are displayed. Many of these instruments were bequeathed to the museum in Bourg-en-Bresse by early twentieth-century residents who were themselves collectors. The heart of the exhibition, however, is the large numbers of paintings, engravings, and porcelain figures that present the hurdy-gurdy player in different lights, from blind beggar in the seventeenth century, to aristocratic lady in the eighteenth, to wandering Savoyard or other peasant in the nineteenth.

All of these items are documented in a truly splendid catalog that also includes a series of studies illuminating various aspects of the exhibition. Most of these studies are not broad brushes but focused research papers that would in other contexts be journal articles.

Florence Gétreau, in "L'enfant vielleux en France: Mutations d'une pratique et d'un stereotype pictural," discusses representations of children playing hurdy-gurdies in the eighteenth century. A surprising number of these instruments survive, two of which are displayed in Brou. They were built in different sizes, which, as Gétreau asserts, indicates that they were tailored to different ages. These are functioning instruments down to the smallest detail, as beautifully decorated as adult instruments of the period. Gétreau points to a number of portraits of aristocratic children playing them in familial settings. On the other side of the class divide are the Savoyard children, who used hurdy-gurdies as a tool for survival as they begged in the streets. The contrast between these children from the highest and lowest ranks of society is disturbing even today; still more disturbing is that a number of the aristocratic children are pretending to be Savoyards. In some respects this study is a continuation of Gétreau's study of eighteenth-century aristocratic portraits of hurdy-gurdy players, "Les belles vielleuses au siècle de Louis XV: Peinture d'une mode triomphante," in *Vielle à roue, territoires illimités*, ed. Pierre Imbert (Saint-Jouin de Milly: FAMDT, 1996), 90–103.

In "L'association vielle à roue et musette aux XVIIe et XVIIIe siècles," Jean-Christophe Maillard explores the relationship between the musette de cour and the hurdy-gurdy in the eighteenth century. These two instruments both produce continuous sounds—both melody and drone—but the musette is a wind instrument and the hurdy-gurdy is a bowed string instrument with a pronounced form of articulation (the *trompette*). In addition, the two instruments have very different relationships with the upper classes. The musette became "respectable" in the early seventeenth century, even while the hurdy-gurdy remained in the hands of blind beggars. It was only in the 1720s that the hurdy-gurdy became a chamber instrument in the hands of the upper classes. At this time Michel Corrette, Joseph Bodin de Boismortier, and others composed a large repertory of sonatas, concertos, and suites that could be played on either instrument alone, or together in duos. Composers also wrote virtuoso music which was singularly designed to exploit the particular idiomatic features of one or the other. I would add two points to Maillard's discussion of these issues. First, too little credit is given to the Versailles luthier Henri Bâton, who improved hurdy-gurdies musically and visually by the addition of carving and decoration normally associated with the more fashionable viola da gamba, and by building them on the bodies of guitars and lutes. Second, hurdy-gurdies were played by many women, whereas the musette was primarily a man's instrument. Playing duos for hurdy-gurdy and musette enabled the two sexes to interact musically on an equal basis, which was not otherwise possible, since women were discouraged from playing wind or other string instruments.

Paul Fustier's article discusses the hurdy-gurdy in relation to the myth of Arcadia, the ideal world of shepherds and shepherdesses, a theme found in literature and painting. Its most notorious manifestation is the Petit Trianon, the make-believe peasant village built by Marie Antoinette at Versailles. A psychologist by profession, Fustier brings a different perspective as to why the hurdy-gurdy became associated with the myth and how people thought about the pastoral pose in the eighteenth century. His article is a brief summary of his dissertation, which has been published in book form as *La vielle à roue dans la musique baroque française: Instrument de musique, objet mythique, objet fantasmé?* (Paris: L'Harmattan, 2006).

Jean-François Chassaing is best known for his carefully researched history of the dynasties of luthiers, the Pimpards, Pajots, and relations, who established themselves in Jenzat, near Vichy (*La vielle et les luthiers de Jenzat* [Teilhède, Combronde: Aux Amoureux de Science, 1987]). These

luthiers developed the hurdy-gurdy that is the model for today's folk instrument. Chassaing's two essays on the hurdy-gurdy in the nineteenth century conclude the study section of the catalog. The first, "Spécificités de la vielle bressane," discusses the prominent hurdy-gurdy builders of Bourg-en-Bresse, the location of the exhibit. Several prospered in this area in the middle of the nineteenth century, taking as their models the instruments of the eighteenth-century Parisian family the Louvets. The work of those luthiers was a direct link between the nineteenth-century folk instrument and the "classical" hurdy-gurdy of the eighteenth century. Chassaing discusses the social conditions that allowed these makers to prosper. He points to the traveling musicians who played for weddings and balls in neighboring villages, who, far from being beggars, were true professionals. At the same time, bourgeois amateurs used the instruments in more intimate surroundings.

Chassaing's second essay traces the symbolism of the hurdy-gurdy from medieval times to the twentieth century. His central point is the continuity and interrelationship between themes associated with this symbolism. The first manifestation of the hurdy-gurdy was the eleventh-century organistrum, associated with the church. The blind beggars in subsequent centuries were in some sense supported and encouraged by the church. In the late eighteenth and early nineteenth century, as the wandering Savoyards succeeded the blind beggars, the hurdy-gurdy became a geographical signifier. While this article in some ways functions as a helpful summation, many of these connections seem to be a stretch.

Though the catalog of objects displayed gives a rather cursory description of the instruments, it provides a fairly extensive analysis of the art objects, in keeping with the emphasis of the exhibition. It would have been appropriate to devote more space to the instruments, since a number were originally collected by residents of Bourg-en-Bresse and are not on display in major collections. Nevertheless, this catalog, with its studies, illustrations, and analyses, is an essential acquisition for anyone interested in the hurdy-gurdy and its history.

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Patrizio Barbieri. *Enharmonic Instruments and Music, 1470–1900: Revised and Translated Studies*. Latina: Il Levante Libreria Editrice, 2008. xii, 616 pp.: 21 color illus., 126 black-and-white illus., 82 tables, 58 musical exx., CD. ISBN: 978-88-95203-14-0. €60,00 (hardcover).

Trained as an electronics engineer, polymath Patrizio Barbieri is also a musicologist, with interests in acoustics, organ building, gut strings, and temperaments. His bibliography runs to more than eighty articles and includes a book on temperament. He was awarded the American Musical Instrument Society's Frances Densmore prize in 2008, for his article "Roman and Neapolitan Gut Strings 1550–1950" (*Galpin Society Journal* 59 [2006]: 147–81). Now Barbieri, with his customary thoroughness and attention to the minutest detail, has compiled a book dealing with octave divisions of more than twelve notes ("compiled," because—as the subtitle indicates—much of the book is an updating of earlier articles and studies by the author). This is a complex subject, and those who fell into the rabbit hole of enharmonicism probably had more than just a little of the fanatic about them. To his credit, Barbieri treats the material in an entirely non-judgmental manner—something I would not have had the restraint to do—laying out the evidence and leaving it to his readers to rate it on their personal fanat-o-meters. The eleven chapters are lettered rather than numbered, and divided into three sections: open-chain systems, closed-chain systems, and a third section of four pages whose humorous contents I will not divulge.

Most of us understand the word "enharmonic" to refer to the equivalency of, say, G-sharp and A-flat on an equal-tempered keyboard or in tempered intonation; but in the world of enharmonicism it has a wider meaning. Let us begin at the beginning. We understand that in meantone temperament, where a keyboard's accidentals are usually tuned C-sharp, E-flat, F-sharp, G-sharp, and B-flat, these five notes are not enharmonic—that is, the C-sharp is not also a D-flat, the E-flat is not also a D-sharp, and so on. The practical result of this is that four major chords in meantone temperament (on B, C-sharp, F-sharp, and G-sharp) are dissonant enough to be unusable. This is an open-chain system, and composers seemed to accept this limitation without complaint. To most musicians of the sixteenth and seventeenth centuries, twelve notes per octave were quite sufficient. Nevertheless, there are circumstances where the restrictions of this scheme become a problem, such as the very real need of church organists to transpose. An upward transposition of a fifth, for example, requires a keyboard with an A-flat (in order to transpose to an E-flat); so keyboards with thirteen notes to the octave, including both G-sharp and A-flat, were not uncommon.

If one split accidental is good, two split accidentals, with G-sharp/A-flat and E-flat/D-sharp, are better, and there are many sixteenth- and seventeenth-century examples, lending ease to transposition. Splitting

all the accidentals is better yet, and if two more are added, between E and F, and B and C, a keyboard (usually a harpsichord, since organs with that many pipes start to become prohibitively expensive) with nineteen notes to the octave emerges. Now, however, we are no longer talking about transposition; this is an entirely different phenomenon, having to do with overcoming the limitations of meantone temperament by producing usable chords on every scale degree. Now we are headed into the rabbit hole. Harpsichords so disposed were common enough to have a name, the *cembalo cromatico*. Although the first known example of such an instrument dates from 1609, such keyboards were already discussed as early as 1555. These instruments were certainly not unusual, particularly in Italy, where such matters seem to have been taken far more seriously than elsewhere. But even nineteen notes per octave were not enough to achieve the holy grail of keyboard music: the ability to play all thirds and fifths in pure, beatless (simple ratio) just intonation. For this, it takes an *archicembalo* or *arciorgano* of thirty-one notes per octave (not really, since even thirty-one notes are not enough; but they come close), and the earliest known examples of both were built for the theorist and composer Nicola Vicentino around 1561. A fair amount of music was written for such instruments by composers such as Trabaci, Pesenti, and Maione.

Matters get more complicated—much more complicated. Barbieri explores the strange sound world of the Florentine humanist Giovanni Battista Doni, who in ca. 1635 proposed the revival of the diatonic, chromatic, and enharmonic genera as well as the *tonoi* of ancient Greek theory. Doni's ideas generated several instruments, including a ca. 1638–39 *triharmonic harpsichord* with three manuals, built by Giovanni Pietro Polizzino (the forty-five keys per octave are pictured on p. 241). Doni's most famous instrument is the *amphichordos* (pictured on p. 232), a "lyre" strung both front and back, intended for the playing of ancient Greek music. Doni rates two chapters (D and E), and both are pretty tough going. Barbieri navigates this material and its complex numerology with ease, but it does not make for undemanding reading.

The second part of the book is devoted to "Closed-Chain Systems." Barbieri explains the desire for such systems. Start with a low C. Tune successive pure fifths on top of it. Thirteen fifths and seven octaves later you arrive at a B-sharp. Tune the first C up seven octaves and compare the two notes.

The B-sharp is sharper than the C by about a quarter of a tone—the Pythagorean comma. One way to close the system is to narrow each fifth by $^1/_{12}$ of the comma. Now, seven octaves of tempered fifths on top of

that C will result in an exactly equivalent B-sharp, thus closing the system through one cycle of fifths. This is, of course, our ubiquitous equal temperament, which, in temperament jargon, is ETS 12. Equal temperament proves the dictum implied (although never stated) throughout the book: in matters of temperament there is no free lunch, since the fifths will not be acoustically perfect (although they will be close; that is, they will be *nearly* whole-number ratios, sounding *nearly* beatless), and the thirds will be quite sharp. Barbieri devotes 226 pages to equal-tempered systems, describing ETS's of up to 136 divisions of the comma. Such a scheme, if realized in an instrument, would result in a keyboard of 136 keys per octave. Fortunately, there are physical limits.

One of the most interesting sections is the one describing the *tricembalo* of Scipione Stella, a musician who worked for the chromaticist Carlo Gesualdo. In 1594, inspired by hearing Luzzasco Luzzaschi (another chromaticist) play one of the *archicembali* constructed by Nicola Vicentino, Stella built one of his own, tuned in ETS 31. But Stella didn't stop at a mere thirty-one keys per octave; some notes were doubled to ease fingering difficulties, and the eight rows of keys numbered fifty-two per octave. Deeming this harpsichord too complicated in its tuning, the botanist Fabio Colonna made a similar instrument, the *Sambuca Lincea*, which he disposed as a clavichord—presumably at least partially fretted, thus reducing the number of rows of keys from eight to a mere six. Colonna's drawing of his keyboard and Barbieri's comparison of it and Stella's are shown on pages 406–7. The complexity is mind-boggling, but clearly an enharmonicist's passion knows no bounds.

The CD accompanying the book is a three-inch mini-disc, rather than the usual five-inch size, and I wonder why. Full-size discs are certainly cheap enough, and of the four CD players in my home, only one was capable of accommodating the smaller size. Other readers may not be as fortunate. The well-chosen examples were all electronically generated—unfortunate, but understandable given the expense, and in many cases the impossibility, of recording real-life instruments. In any case, close listening is advised.

There are some linguistic infelicities, such as printing Doni's given name(s) as Giambattista on page 180 and Giovanni Batista everywhere else—no doubt the result of the fragmentary nature of the book. Typographical errors, such as the one on page 325, section F.8.2, where the "n" is omitted from the word "and," are few and inconsequential. The exhaustive bibliography, which lists forty-one of the author's own works, runs to thirty-nine pages.

A remarkable summing-up of nearly thirty years of research by Barbieri, *Enharmonic Instruments* is crammed full of minutely detailed information on enharmonicism, with the matters dealt with in this review representing only a portion of the total. Formulae, tables, charts, and mathematical explanations abound; but the material is accessible, and although not an easy read, it represents an exhaustive discussion of this arcane corner of our tonal system.

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Luisa Morales, editor. *Cinco siglos de música de tecla española / Five Centuries of Spanish Keyboard Music: Proceedings of FIMTE Symposia 2002–2004*. Garrucha, Almería: Asociación Cultural LEAL, 2007. 460 pp.: 9 color plates, 13 black-and-white plates, 62 illus., 52 musical exx. ISBN: 978-84-611-8235. €75,00 (paper).

This volume, the second in a series of publications from the Festival Internacional de Música de Tecla Española (FIMTE), contains selected papers in Spanish and English from the FIMTE symposia of 2002, 2003, and 2004. Several items are of interest to organologists and this review will focus on them.

During the 2002 FIMTE Symposium an exhibition entitled "The Origins of Spanish Keyboard Music" was on display at the Parador of Mojácar. A catalog corresponding to that exhibition is included in this volume. Twenty-two photographic plates depict keyboard instruments in Spain from the last decades of the thirteenth century to the end of the sixteenth century. Sixteen of these are iconographic representations of clavichords, harpsichords (one of which may be a keyed psaltery), and a virginal, all from Spanish sources. The other six photos are of Flemish stringed keyboard instruments related historically to Spain. These include the only extant instrument by Hans Bos, a virginal (1578) at the female monastery of Santa Clara in Tordesillas; a double virginal (1581) by Hans Ruckers the Elder found near Cusco, Peru, and now at the Metropolitan Museum of Art, New York; and a harpsichord (1601) by Andreas Ruckers in the Cathedral of Segovia. This pictorial catalog complements that of known historical Spanish keyboard instruments in Morales's first publication, *Claves y pianos españoles: Interpretación y repertorio hasta 1830* (Almería: Instituto de Estudios Amerienses, 2003).

"An Early Keyboard by Raymundo Truchado: An Authentic Inscription, a Doubtful Instrument?" by Mia Awouters describes a seventeenth-century *Geigenwerk* purchased in 1902 for the Brussels Museum of Musical Instruments. It is signed *Fray Raymundo Truchado inventor 1625*. The instrument has undergone a number of restorations and adaptations and bears little resemblance to its original state. Awouters discusses these interventions and what is known of the history of this controversial instrument. The signature appears to be original, and it is known that a family of organ builders with the name Truchado existed as early as the first quarter of the seventeenth century in Spain. However, no firm conclusions about the instrument's origins can be made at present.

Michael Latcham provides two thought-provoking essays about eighteenth-century stringed keyboard instruments in Spain and Italy. In "Four Eighteenth-Century *Cembali*," Latcham draws on eighteenth-century documents: Queen Maria Barbara's inventory of instruments appended to her will in 1758; an inventory of Farinelli's possessions from 1783 and his 1784 biography by Giovenale Sacchi; and announcements of instruments by their makers. The first instrument discussed is a *cembalo a martelletti* from 1730 by Ferrini of Florence. Farinelli owned such an instrument, bequeathed to him by the queen. His remark that the queen had left him her "three best" instruments gives Latcham reason to believe that Farinelli's Ferrini piano is the first one in Maria Barbara's inventory, described as a "*clavicordio de Piano* made in Florence." He cites other sources, such as Charles Burney's description of a Florentine *cembalo a martelli* of 1730 in Farinelli's house and Sacchi's description of a *cembalo* with little hammers by Ferrini. Latcham believes that the Ferrini piano could have been in Maria Barbara's possession before she moved to Spain and that it had the approval and recommendation of Scarlatti.

The second instrument, a *cembalo a penna* with registers by Diego Fernandez dating between 1746 and 1756, is second on the queen's list of instruments. Described in detail in Farinelli's inventory, it had four sets of strings (three metal and one gut) and a series of foot pommels or *Bottoni* that operated five stops. These produced changes or additions to the set of metal 8-foot strings that was probably normally always in use. These stops included an octave register (4-foot metal strings), archlute, harp, a second 8-foot register of metal strings, and a flute sound, produced by jacks with leather plectra. The *Bottoni* could be used singly or in combinations. With them the player could change registration instantaneously from loud to soft or vice versa, or achieve a crescendo or de-

crescendo effect by gradually depressing or releasing certain *Bottoni*. The instrument was thus capable of dynamic variations. Farinelli considered it his "second best" instrument after the Ferrini, his favorite. According to Sacchi, Farinelli consulted with Fernandez to create this harpsichord as a surprise for the queen, after she expressed a desire for an instrument with varied voices.

The third instrument is a 1775 *cembalo a martelli* by Paolo Morellati of Vicenza with twelve registers and a Cristofori-style action. The hammers were likely solid wood with no covering. Morellati examined the instruments by Ferrini and Fernandez at Farinelli's house, according to Sacchi, but Latcham believes that his cembalo with "twelve distinctly different *registri*" may have been inspired by the German *Tangentenflügel*. Morellati described the various stops as producing the sounds of the harpsichord, *vox humana*, brass- and gut-strung mandolin, glasses, *sordino*, *spinettina*, clarinet, harp, harp with *sordino*, *chittarone*, and a full orchestra. This was indeed an expressive instrument, especially since in addition to the stops the player could vary the dynamics of the instrument through touch.

The fourth instrument, the *Cembalo Angelico* announced in an anonymous publication in Rome in 1775, is not a single instrument, but a description of improvements made to a harpsichord. Chief among these was the replacement of the quill on the jack with a piece of leather. This had the effect of stroking the string, creating a sound described as being like that of a violin or recorder. According to the inventor's description, the volume could be varied by the player's touch. A pedal was provided to change between the quilled plectra and those with the leather coverings. There was also a *sordino* pedal that engaged a roll of cloth, which damped the strings near the nut. The *sordino* could be engaged on only the bass, only the treble, or on both registers, depending on which area of the pedal was depressed. All of these additions were intended mainly to provide different dynamic levels for the *Cembalo Angelico*; however the description implies that its maker was also interested in producing imitations of other instruments, such as lute, recorder, or horn.

Latcham argues that keyboards provided with stops were not merely intended to compete with the new, expressive piano. Harpsichords and pianos coexisted for most of the century, and either instrument could be equipped with stops to imitate the other. It is likely that stops were not meant only for special effects, such as imitating another instrument, but that the eighteenth-century keyboard player would have routinely combined them with the distinctive sound produced by jacks or hammers to

create dynamic variation and a variety of timbres. Throughout the eighteenth century in most European countries, keyboards were classified generically (*cembalo*, *clavicordio*, *clavecin*, harpsichord) without regard to their type of action, and it is likely that eighteenth-century musicians made fewer distinctions among the various types of keyboard instruments than we do now.

Latcham's second article, "The Twelve *Clavicordios* Owned by Queen Maria Barbara of Spain and the Seven *Cembali* Owned by Carlo Broschi, Known as Farinelli: Facts and Speculation," reinforces this theory. Latcham describes the instruments, using sources from the eighteenth century: the 1758 inventory of Maria Barbara's instruments; her 1756 will; invoices from 1749 and 1757 from Diego Fernandez for a harpsichord stand and two harpsichords, respectively; Charles Burney's description of his visit to Farinelli in 1770; Farinelli's will from 1778; the 1783 inventory of Farinelli's instruments; and Sacchi's 1784 biography. Latcham proposes the intriguing possibility that the 1730 Ferrini piano, the first instrument on the queen's inventory list, was her preferred instrument, at least until later in her life. Alessandro and Domenico Scarlatti visited the Florentine court in 1702 and 1705, and Latcham speculates that they would have seen and played Cristofori's new *piano forte* there, and that Domenico could have introduced it to the Portuguese court after his arrival in Lisbon. There is evidence that King João V purchased Cristofori pianos, and it is likely that Maria Barbara was playing them from a very early age with the guidance and approval of Scarlatti. When Maria Barbara moved to Spain in 1729 to marry Crown Prince Fernando, she retained Scarlatti as her music master. In the 1730s and 1740s, there were *cembali a martelletti* at the Spanish royal residences of Aranjuez and San Lorenzo, as well as the Ferrini instrument at Buen Retiro, reason to suppose that these were the preferred instruments. If these were indeed Maria Barbara's (and by extension, Scarlatti's) favorites, it is possible that many of Scarlatti's sonatas could have been conceived and played on the piano. Latcham proposes that the arrival of a new sixty-one-note *cembalo a penne* around 1749 may have displaced the piano as the queen's favorite, because of its larger range and more brilliant sound. The larger-range Scarlatti sonatas were undoubtedly associated with this harpsichord.

The conversion of two pianos into harpsichords has long been held as evidence that the court preferred the plucked instrument. Latcham argues that with the ascension of Fernando to the throne and the arrival

of Farinelli as director of court operas, life at the court, particularly musical life, became much more extroverted. For his lavish operatic productions, Farinelli would have required a loud continuo instrument, and the harpsichord filled the bill better than the soft-voiced piano. A shortage of continuo instruments may have made it necessary to convert two of the Florentine pianos to harpsichords. Also, a harpsichord, with its simpler action, was much easier to transport than a piano, an important consideration for a court that was forever traveling between residences. In any case, one piano remained at Aranjuez, one at San Lorenzo, and the Ferrini piano at Buen Retiro. This seems good evidence that the queen and Scarlatti both enjoyed the piano as well as the harpsichord. Latcham proposes that the modern-day preoccupation with finding the right instrument for a particular piece of music was not necessarily a concern in the eighteenth century; in those days instruments were likely chosen for the circumstances in which they were needed.

The final paper concerning instruments is Daniel Codina's "El Velacordio." Named for its soundboard in the shape of a sail, this plucked keyboard instrument was invented by Father Mauro Ametller, a monk from Montserrat. With this invention, he hoped to save musicians the annoyance of having to constantly change the crow-quill plectra, which quickly wore out due to the friction of plucking the strings of a harpsichord and from the humidity in churches and concert halls. He also hoped to create an instrument that had enough power to be heard in a full orchestra. The *velacordio* had steel plectra instead of quills, with each plectrum being held by a small piece of baleen to give it the flexibility to return. There were three strings per note; the soundboard had no lid and sat vertically behind the keyboard. A pedal could make the sound immediately or gradually softer. The keyboard had a fast and easy action. No examples of the *velacordio* have survived, and information about Father Ametller is limited to oral history, due to the destruction of the Montserrat library and archives during the Napoleonic wars. In 1988, Codina discovered a presentation that Father Ametller had made to the Real Junta de Comercio of Barcelona in 1817 when he sought admittance to the Royal Academy of Sciences and Art. This document included a description of the *velacordio* and two drawings, a general view of the instrument and a detail of the mechanism. It seems that experts in physics and music were impressed by the sonority and durability of the instrument, and its inventor was admitted into the Academy, earning an allowance for life as a reward.

Other articles in this volume deal with Spanish keyboard music and related topics from the sixteenth, seventeenth, and eighteenth centuries. (For a review of the complete volume, see John Koster, "Five Centuries of Spanish Keyboard Music," *Early Music* 36 [August 2008]: 460–63.) It is heartening to see so much information coming from Spain and being made available to the public. We look forward to forthcoming publications from FIMTE and Luisa Morales.

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Bernard Brauchli, Alberto Galazzo, and Judith Wardman, editors. *De clavicordio VIII: The Clavichord on the Iberian Peninsula; Proceedings of the VIII International Clavichord Symposium, Magnano, 5–8 September 2007.* Magnano: Musica Antica a Magnano, 2008. 250 pp.: 56 color illus., 29 black-and-white illus., 24 tables. ISBN: 978-88-900269-5-9. €55,00 (soft cover).

Biennial conferences held in the village of Magnano under the auspices of the International Centre for Clavichord Studies bring together musicologists, instrument builders, performers, collectors, and enthusiasts in ideal circumstances for sharing information and insights. The resulting *Proceedings*, which do not take account of the regularly accompanying recitals and instrument exhibitions, are an invaluable resource for everyone concerned with clavichords and historical keyboards generally. While focused nominally on Iberian topics, the 2007 symposium also touched on other regions as well as on current technical research projects. Lavishly illustrated, mostly with clear color photographs, and furnished with ample bibliographies and an index of names (with a redundant, misprinted entry for Hanserik [sic] Svensson, p. 249), the present volume expands upon subjects broached in previous issues and opens new areas for further investigation.

A survey of its contents discloses wide diversity among the nineteen major contributions (all in English, with Italian abstracts; some are translated from other languages). Celebrating the 150th anniversary of the birth of the pioneer early-instrument builder and performer Arnold Dolmetsch, Uta Henning gathers personal impressions of Dolmetsch and his so-called Bach clavichord, and Peter Bavington describes Dolmetsch's impressive clavichord output before 1914; he errs, though,

in remarking (p. 40) that John Challis's clavichords made after about 1930 have two bridges on the soundboard, because Challis's later models have just one.

Macario Santiago Kastner's centenary is marked by tributes from persons who knew this scholarly musician and pedagogue well: family members offer biographical reminiscences, Joan Benson warmly recalls her study with Kastner a half-century ago, and Bernard Brauchli transcribes his interview with a somewhat reticent Kastner in 1984 (p. 67: Brauchli: "How did you manage to continue your activities during the Civil War and during the Second World War?" Kastner: "In spite of the many difficulties I continued working.") and compiles Kastner's extensive bibliography of books and articles, collaborations, and editions of early keyboard music.

Further in keeping with Kastner's Iberian interests, Gerhard Doderer characterizes clavichords in Portugal after 1800, amply illustrating their relationship to Portuguese square pianos; one might doubt, though, Doderer's assertion that square pianos first appeared in Lisbon as late as 1800, since the quoted newspaper account of "some square pianofortes, newly invented, with a metal mechanism . . ." (p. 84) could simply refer to a particular novel model.

From a player's perspective, Ilton Wjuniski briefly analyzes a seventeenth-century keyboard manuscript in the library of Oporto in terms of function and polyphonic compositional techniques. Also dealing with music, Michael Tsalka's fresh appreciation of Daniel Gottlob Türk's little-known sonatas persuasively argues that the best of these forty-eight works deserve a place in the modern repertoire; the manuscript of one sonata, in A major, appears here in perfectly legible photographic reproduction.

Turning to sixteenth-century cittern fingerboards as evidence for contemporary temperaments, Alfons Huber shows with measurements, photos, and graphs that fret placement on these plucked instruments (mostly Italian in his sample) has implications for understanding the equally critical placement of clavichord tangents. Farther afield, Dorothea Demel draws on the recent *Muzykalnyi Peterburg: entsiklopedicheskii slovar* (Encyclopedia of musical St. Petersburg), edited by A. L. Porfireva (St. Petersburg: Rossiiskiy Institut Istorii Iskusstv, 1996–2003), and other published sources to reveal the former availability of clavichords in that city and identify some makers. Demel's largely secondhand data are usefully gathered here in English (sometimes strangely

transliterated) but her statements that Frantz Kirschnigk (1741–1802) invented both the accordion and a free-reed organ register (p. 115) lack corroboration.

Georgian England, like imperial Russia, is not noted for clavichords, but Derek Adlam presents fascinating glimpses of the instrument in the milieu of Handel and the Granville family, chiefly through references in Mary Delany Granville's correspondence. Adlam speculates that several Hass clavichords in British collections were imported in the eighteenth century, perhaps for use among the Handel-Granville circle. Other substantial contributions include Lothar Bemmann's article on the hitherto obscure 1724 workshop manual of Johannes Creuzburg, who was primarily an organ builder. Most intriguingly (in that no clavichord of his survives), Creuzburg gave two sets of dimensions, for small and medium-size instruments, and directions for stringing at both choir and chamber pitches, leaving open the question of intended string gauges. A typographical slip (p. 147 n. 24) thrice replaces the intended sign for foot (') with the inch sign ("), producing a very miniature instrument indeed.

HansErik Svensson's analysis of Swedish construction practices deals largely with problems of accurate measurement. Svensson applies his painstaking methodology to twelve clavichords by Pehr Lindholm (or Lindholm and Söderström) dating between 1785 and 1813 and uses the results to posit Lindholm's workshop procedures. Eva Helenius approaches the process from a different direction, viewing Swedish clavichord traditions in relation to Gottfried Silbermann's models (with special attention to the oddly-shaped *cembal d'amour*), and concluding with an appeal for an international research project on Silbermann as a maker of stringed keyboards who trained a generation of followers. Further in this historical vein, Pierre Verbeek offers an exemplary dissection of the 1670 Israel Gellinger clavichord in Namur, Belgium. Damaged but essentially unaltered, this instrument comes from the same hands as the well-known two-manual octave spinet in Leipzig, these apparently being Gellinger's only extant complete instruments. Verbeek's study adds to Gellinger's reputation as an organist and organ builder, and, like other articles here, appeals also to readers outside the clavichord sphere. Some might stumble momentarily over the translation of *Werkzoll* as "work-suinch" (p. 227), *recte* "work-inch."

Two papers demonstrate the application of computer technologies to broad fields of clavichord research. Simon Field's plan for a comprehensive, global keyboard instrument database cites advantages of XML

(Extensible Markup Language) platforms, as employed by the Edinburgh University Collection of Historic Musical Instruments in partnership with the British Clavichord Society; their combined database holds more than 1,200 harpsichords and clavichords, and represents the future of instrument cataloging and collection management. Of interest especially to makers, detailed, graphic acoustical portraits by a team of French investigators of four modern clavichords, concentrating on tangent velocity, loudness, and decay time, reveal markedly distinct profiles that can be related to physical features of the instruments. These objective findings, to be expanded to encompass timbre and the acoustic effects of individual playing techniques, add an important dimension to discussions of how instruments actually work.

A handful of attractive additions and some corrections to Bernard Brauchli's ongoing clavichord iconography round out the contents of this handsomely produced volume.

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Christian Ahrens. *Valved Brass: The History of an Invention.* Translated by Steven Plank. Bucina 6. Hillsdale, NY: Pendragon, 2008. Originally published as *Eine Erfindung und ihre Folgen: Blechblasinstrumente mit Ventilen* (An invention and its effects: Brass instruments with valves). Kassel and New York: Bärenreiter, 1986. xiii, 135 pp: 10 illus., 11 tables, 18 musical exx. ISBN: 978-1576471371. $42.00 (paper).

Steven Plank, co-translator of Edward Tarr's *The Trumpet* (Portland, OR: Amadeus Press, 1988), has now translated another important book on brass instruments. The English title is misleading: this book does not, as you might expect, present new details of the various attempts and successes of valve inventors, but traces the sometimes rapid, but often painfully slow, acceptance of these inventions by composers, musicians, and the public. The book's unique value lies in showing the uneven acceptance and the social and economic implications of the invention.

Valved Brass begins with a ten-page introductory chapter on the history of valves. Chapter 2 discusses "Valved Instruments in the Judgment of Musicians." In chapters 3 through 5, on valved instruments in art music, military music, and *Volksmusik* (popular music), Ahrens shows that the squabble over the use of valved trumpets and horns in the orchestra was

only a small part of the story. Chapters 6 and 7, on "Social Aspects" and "Economic Aspects," provide further perspectives. The impact of the valve invention reached into almost every style of music, became part of the social changes of the time, and created a new instrument-making industry of considerable economic importance. Even music publishing was affected, since choirs of valved brasses required written arrangements. New instruments are examined in chapter 8 (and also in chapter 3). Chapter 9 is a summary, and there is a bibliography and an index.

Using an overwhelming number of quotations from books, periodicals, concert reviews, etc., most of them newly brought to light, Ahrens shows how the introduction of valved instruments proceeded in different countries and in different types of music, and how they were accepted more slowly in some areas than has been assumed by most writers of music history. There are a good number of illustrations, including significant musical scores and some wonderful cartoons.

From a present-day perspective, it is absolutely amazing how little attention writers of the period of valve introduction paid to what we now see as the core improvement it made possible—the ability to play all the chromatic notes of the scale with equal tone quality and acceptable intonation. The discussions Ahrens quotes are invariably centered on the sound of the new valved instruments, as compared with the great beauty of the natural horn or the commanding brilliance of the natural trumpet. Because of the cleverness of composers in using the natural brasses, audiences and writers were evidently unaware of the playing difficulties that were solved by the valve.

The valve brought not only an improvement in orchestral horns and trumpets, but new instruments for the neglected alto and tenor ranges (chapter 8), and much stronger and lower bass instruments (chapter 3). As Ahrens states: "The concentration of the older scoring in the melodic realm on the one hand and the bass on the other is astonishing, while the middle parts were not only weakly scored, but also were neglected with regard to voice leading" (p. 78). And about the bass instruments, he notes an 1816 article in the *Allgemeine Musikalische Zeitung* by Gottfried Weber lamenting that "the usual bass instruments were either musically inadequate or too weak in sound to be able to assert themselves in the enlarged orchestra" (p. 36).

Periodical sources cited are almost exclusively the *Allgemeine Musikalische Zeitung*, published in Leipzig; the *Neue Zeitschrift für Musik*, published in Leipzig, but including material from many countries; and

the *Allgemeine Wiener Musik-Zeitung*. One might have wished for the inclusion of some input from Italian, French, and English periodicals, but this would probably have been an overwhelming task. Some French sources might have revealed the importance of the valved cornet, which has been neglected in this study. For a while I was puzzled by the citations from the two Leipzig newspapers. They do not include the customary date of issue, column and page number, but only the year, and a column number that is too large to refer to a newspaper column. For example, the very first footnote cites the *Allgemeine Musikalische Zeitung* thusly: "AMZ (1823), col. 222" [Sp. 222 in the original]. A check of a microfiche of the *AMZ*, however, shows that the columns are numbered throughout each volume, so all you need is the year and column number.

The translation is quite literal, and it is easy to find corresponding paragraphs and sentences for comparison. Unfortunately this means also that passages that are difficult to understand in English are often no clearer in German. The unfamiliar (to this reader) word "ambitus" is occasionally used for instrument range in both the English and German texts. The word "Volksmusik" is untranslated, but probably means "popular music," not "folk music" as used in English today.

The table on page 45 comparing the dimensions of an 1840 tuba with a 1900 tuba and a 1905 (B-flat) ophicleide can be more easily understood with better translations and one correction. "Length of the bell pipe" is better as "Length of bell section" [*Schallstück*]; "Length of bell end" is better as "Length of bell flare" [*Stürze*]; "Diameter of bell" should be "Diameter at beginning of bell section" [*Beginn Schallstück*]; and "Diameter of the bell end" should be "Diameter of the bell" [*Stürze*]. In addition, the columns of this table are out of alignment and the "Diameter of receiver" figure for the 1900 tuba should be 13.2, not 133.2. These details are correct in the German edition.

Another slight problem in translation is the designation of octaves when discussing the range of instruments. For a long time I was puzzled by the expressions "small and one-line octaves" or "three-line octave." The German passages using these terms (p. 70) are "im Bereich der kleinen und der eingestrichenen Oktave" and "die dreigestrichene Oktave" and refer to the familiar octave designations with upper or lower case letters and one or more strokes or primes.

Curiously, the English translation spells the name Červený as "Eerveny," but the name appears in the index under the Cs. This is probably just a typographical or printing font error, but in both the original

and the translation the given names of this important Königgrätz maker are "Franz Wenzeslaus" instead of Václav František as in William Waterhouse, *The New Langwill Index* (London: Tony Bingham, 1993), and *New Grove Online*. The correct initials, "V. F." are given in the index entry of the translation. I suspect this confusion may be the result of language changes forced upon the Czech people by successive rulers.

Among the many wonderful quotations is one from Eduard Hanslick in 1897 about the popularity of military music. It appeared to him that "peaceful conquests that our army makes with the clarinet instead of with the bayonet" were in any case not the worst mode of conducting war (p. 54). Another is an anonymous one from the *Allgemeine Musikalische Zeitung*, 1848: "But this instrument [the valved trumpet] may be rather suitable, like the related trombone, to blast down walls, rather than through cantabile playing to awaken gentle feelings. Therefore, in spite of all the admiration, one can smile at the notion that it is unnatural" (p. 14). Ahrens's concluding quotation is Heinrich Stölzel's promise to King Friedrich Wilhelm III of Prussia, "to make a music through these instruments that should amaze the world" (p. 123).

This is a marvelous book with a totally new perspective on valve history. It presents the reader with an enormous amount of original material bearing on the subject from social and economic as well as musical points of view. In its pages, this invention is revealed to have far more significance than is generally conceded. Besides, it's really fun to read the thoughts of these nineteenth-century writers as they tried to make sense of their changing musical world.

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Eric Hoeprich. *The Clarinet*. The Yale Musical Instrument Series. New Haven and London: Yale University Press, 2008. 395 pp.: 102 illus., 40 musical exx. ISBN: 9780300102826. $40.00 (cloth).

The long-awaited book by Eric Hoeprich has finally arrived! Hoeprich, an American who lived in Amsterdam for over twenty years from the early 1980s, is well known as a superb player of the early clarinet and basset horn. He has made historical clarinets and basset horns, several of which he plays on recordings. In addition, he is a scholar of the early clarinet, a collector of historical clarinets, and a teacher at the Conservatoire national supérieur de musique in Paris, the Royal Conservatory of

Music in The Hague, and Indiana University, Bloomington. This extensive background provides a unique and invaluable perspective for his general history of the clarinet.

The Clarinet is organized into thirteen chapters stretching chronologically from the origins of the clarinet through the twentieth century and beyond, with individual chapters for chalumeau, basset horn, bass clarinet, odd clarinets, and "Bands, Folk Music, and All That Jazz." The two appendixes are an alphabetical list of instrument makers and a chronological list of instruction materials. There are extensive notes, a select bibliography, and a detailed index. The text is supported and enlivened by more than one hundred clear illustrations and forty musical examples, including material located by Hoeprich. The author has maintained a high level of scholarship throughout, and the result is a very useful book.

By dedicating chapter 4 to the chalumeau, Hoeprich emphasizes its treatment by a number of eighteenth-century composers as an expressive instrument. Here and there in the earlier chapters he revisits topics that he had investigated years previously, such as the identification of the three-key Denner clarinet at the University of California, Berkeley. Scholars have suggested that this clarinet was made about 1740 by Johann David Denner, a son of I. C. [Johann Christoph] Denner. At the 2007 Edinburgh University Clarinet Symposium, David Ross pointed out the similarity in exterior profile of the stock-bell sections of an I. C. Denner two-key clarinet and the Berkeley instrument. Hoeprich mentions this point (pp. 23–24) without reference to Ross. By itself, however, the resemblance is not enough to establish Johann Christoph as the maker of the Berkeley clarinet.

Chapters 5, 6, and 7 are full of astute and interesting comments. Hoeprich contributes valuable information about the way instruments were played, quoting from important clarinet instruction books by, for example, Backofen, Lefèvre, and Baermann. His suggestion that Georg Henrich Scherer produced the earliest separated mouthpieces and barrels is very credible (p. 25: the text mistakenly includes the initial I, for Johannes, Georg Henrich's father, who died in 1722). It is quite interesting (p. 40 n. 66) to read that Johann Stamitz included the clarinet in "O salutaris Hostia" in the *Motetto de venerabili sacramento,* but this work was probably written in 1754–55, not 1750 (according to Eduard Schmitt, *Kirchenmusik der Mannheimer Schule,* vol. 2, Denkmäler der Tonkunst in Bayern, n.s., 3 [Wiesbaden: Breitkopf & Härtel, 1980]: xi).

Further valuable comments include the observation that the mouthpieces of many chalumeaux have been replaced or refaced many times (p. 48). Hoeprich notes that Joseph Fröhlich wrote about the availability of wide and narrow mouthpieces, suggesting that these options were available in the early nineteenth century (p. 67). On instrument construction, Hoeprich emphasizes that the amount and shape of undercutting in tone holes largely determines instruments' sound quality, intonation, and response (p. 68). He points out that the degree of conicity in the stock joint affects the sound and constitutes the critical difference between German and French clarinets today, and that this difference began by 1800 (p. 68). Chapter 6 is an outstanding essay on Mozart and the clarinet. Hoeprich's explanation of the technical and musical demands of Mozart's music for players of the classical clarinet is very thorough, and his advice is based on his years of successful performances.

Chapter 8 discusses the development of the clarinet from 1844, the year of Auguste Buffet's Boehm clarinet patent, to 1900 with completeness and clarity for makers in France, Germany, and England. Chapter 9, on the clarinet in the twentieth century and beyond, adds important information on makers in Belgium, the United States, and Italy. Other topics there include mouthpieces, the production of new clarinet designs, and the use of electronics with the clarinet. The chapter treats performance aspects such as national playing styles, early music, pitch, vibrato, and recordings; there is also a good overview of music. In chapters 10 through 12, Hoeprich provides good summaries of the history and use of the basset horn, bass clarinet, high clarinets, *clarinette d'amour,* and other "odd" clarinets. The final chapter includes information on bands, folk music, and jazz. Although a lot more could be said, the discussions are informative. Hoeprich covers a number of important jazz players and styles, and folk music and klezmer are given short but interesting sections.

There are some typographical and bibliographical errors, and words are occasionally omitted. The bibliography is substantial, although a few sources are missing the titles of articles or publisher's information. Music, tutors, and other items in the text sometimes lack footnote references, leaving doubt as to source, although a vigilant reader familiar with the literature of the clarinet can usually figure it out from the bibliography. The important topic of clef notation in eighteenth- and nineteenth-century clarinet music is not mentioned in the text.

There are some errors of detail. For example, Hoeprich states that Charles Burney wrote for clarinets and horns in his opera *Queen Mab*

(1750) (p. 39). Actually, Burney did not include these instruments in this work; a later composer, Henry Harington, adapted music from *Queen Mab* in his *Songs, Duetts, and other Compositions* (London, ca. 1800) and added clarinets and horns (see A. M. Stoneham, Jon A. Gillaspie, and David Lindsey Clark, *Wind Ensemble Sourcebook and Biographical Guide* [Westport, CT: Greenwood Press, 1997], 37 nn. 93, 104). A significant tutor, Valentin Roeser's *Gamme de la clarinette*, is dated to the year 1760 without providing a source (p. 63). A more secure date, ca. 1769, is found in the listing of this tutor in the publisher Le Menu's music catalog, reproduced in Cari Johansson, *French Music Publishers' Catalogues* (Stockholm: Almqvist & Wiksell, 1955), vol. 2, facsimile 81. Hoeprich states that Robert Schumann wrote a revision of J. S. Bach's *St. John* [*recte St. Matthew*] *Passion* with basset horn (p. 256); rather, the revision was written by Georg Schumann and published in London by Eulenberg in 1929. Hoeprich (p. 372 n. 63) assumed that Vincent Springer wrote an anonymous *Tabelle für die Klarinette und das Bassethorn*, listed in the Hummel (Amsterdam) catalog of ca. 1800. In this, he was relying on Pamela Weston's unsupported claim (*Yesterday's Clarinetists: A Sequel* [York: Emerson, 2002], 160). But Johan van Kalker lists it as "Anonymous, Tabelle für die Klarinette und das Bassethorn, Amsterdam: Hummel, ca. 1800, location unknown, 6 pages" (*Die Geschichte der Klarinetten: Eine Dokumentation* [Oberems: Verlag Textilwerkstatt Oberems, 1997], 238).

This book could have been more carefully edited, and it is hoped that the errors in dating, citations, and details will be corrected in a later edition. But Hoeprich covers an enormous number of topics very adroitly. His book will undoubtedly be read and referred to for many years by clarinet students, players, teachers, makers, and scholars. I highly recommend it as a "must have" for library and personal collections.

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Arnold Myers, editor. *Catalogue of the Sir Nicholas Shackleton Collection.* Text by Heike Fricke et al.; photography by Raymond Parks. Edinburgh: Edinburgh University Collection of Historic Musical Instruments, 2007. 809 pp.: 1024 color illus. ISBN 978-0-907635-58-1. £70.00 (paper).

This book presents the musical instruments of Sir Nicholas Shackleton (1937–2006), a physicist, organologist, and clarinetist whose contributions were legion. I knew him by e-mail as an enthusiastic, insightful, and

encouraging collector. His collection, donated to the University of Edinburgh after his death, includes 880 instruments, numerous tutors, and other paraphernalia. The 817 historical clarinets are the most extensive gathering of such instruments in the world.

The robustly constructed *Catalogue* is an ambitious presentation of this large collection. It is divided into the categories utilized in other documentation of the university's collection of musical instruments, each presented by an expert in the field. The clarinets (divided into sixteen subgroups) most merit publication; other categories contain interesting specimens but are too minimal to be of great value. For example, the "instruments of regional cultures worldwide" are two shakuhachis, a pūngī, and a xylophone, none of them illustrated, reliably dated, or attributed, and representing only three cultures.

The detail and space allotted to the Western instruments are laudable. Most receive an entire page and are shown in color. The photographs generally illustrate the whole instrument and, often, salient characteristics of the mark or keywork. The photography is expert and presents even run-down specimens in a positive light; the instruments are simply delicious to view on the page.

While the *Catalogue* is valuable, it has flaws, which share the common basis that it was prepared without adequately considering the needs of the scholar. The text varies in quality. Edwina Smith's comments on flutes, Simon Milton's on oboes, and William Waterhouse's on bassoons are uniformly enlightening. But Heike Fricke's clarinet texts, while chock-full of data, are unsatisfying; she failed to expand on the mere facts as these other authors did. Fricke is an authority on historical clarinets; her insights on the specific attributes and importance of the clarinets shown would have been very valuable. Other contributors were Arnold Myers, Raymond Parks, and Emily Peppers.

In the photographs, one wishes for more views of unusual mechanisms and more consistency in the color printing; close-ups differ in hue from portraits of entire instruments. I was disappointed not to find photographs or detailed descriptions of the early oboe and bassoon reeds held in the collection. The analysis of these oboe reeds (published by Geoffrey Burgess and Peter Hedrick as "The Earliest English Oboe Reeds? An Examination of Nineteen Surviving Examples," *Galpin Society Journal* 42 [1989]: 32–69) was of seminal importance to period oboe players. Anyone who purchases the *Catalogue* should not have to consult other sources to learn about such important items in the collection.

The text is marred by numerous errors. For example, piccolo 5437 is dated "1919–1980 (probably c. 1980)," despite being marked "Made in GDR," a nation that was established in 1949. Consider also the dating of a metal Boehm-system clarinet said to be by Triebert of Paris (p. 463). Fricke dates the instrument to ca. 1850, during the ascendancy of Frédéric Triebert, which is certainly wrong. The keywork design does not support this dating; the Triebert mark—a castle with three merlons in the turret—is absent; and the mark includes a bomb enclosing the number "29". This was the dating system used by Couesnon—which owned the rights to the Triebert name—for metal instruments; the clarinet was actually made in 1929 by Couesnon. A student of French oboe making, or of the early saxophone, would have recognized this.

Other awkward matters come up as one carefully studies the *Catalogue*. Matched instruments—for example, a set of three clarinets in C, B-flat, and A—are not described together. Thus to compare specimens in a set by the same maker, one must go from one instrument's page to the maker's name in the index, then to the next instrument's page. One finds errors in the page numbers of the index as well. Information on previous ownership is welcome but is not always helpful. What is one to make of "Bill Burkett; ex-Cleveland collection"? Did Burkett live in Cleveland? Did he have collections in several cities? Or was there another owner named "Cleveland?" Several instruments' missing parts or mouthpieces may be among those parts listed in the index as unattributed. The two "missing" bocals and mouthpiece for a bass clarinet by Oskar Oehler (p. 739) illustrate this: are these not the items shown as no. 5569 (p. 757)?

What most hampers the scholar is the lack of cross-referencing and other aids to help the reader get around this large book. To describe so many clarinets in any meaningful detail unavoidably makes the book cumbersome. Myers et al. are to be congratulated for not sacrificing detail for expediency, but the lack of attention to a researcher's needs makes data difficult to cull. The separation of clarinets—first by nominal pitch, then by number of keys, only then by age—is not particularly useful for research. I sought, for example, to determine the relative use of boxwood, rosewood, and grenadilla in clarinets between the late eighteenth and mid-nineteenth centuries. Although the data are there (albeit without the word "grenadilla"), the difficulty in finding them made me wish for a CD-ROM with an Excel spreadsheet—something that a graduate student could set up in a week, and which would add immeasurably

to the value of this book. Even a set of tables as in Phillip T. Young's *4900 Historical Woodwinds: An Inventory of 200 Makers in International Collections* (London: Tony Bingham, 1993)—which could be done on as few as thirty pages—would be of immense value.

I am disappointed that the authors did not use modern means of data management to improve this book and to provide a model for future such publications. This is not an unreasonable demand; every textbook my daughter brings home from junior high school has an electronic supplement with further data, references, and study material. Indeed, Arnold Myers has shown himself to be particularly adept at this, as witnessed by the wonderful web site of the Edinburgh University Collection of Historic Musical Instruments. Happily, he has established a web page to present corrections to the *Catalogue*, http://www.music.ed.ac.uk/euchmi/upz/uczs.html.

Overall, the *Catalogue* is a splendid visual achievement; nevertheless, the book is limited by a lack of utility. Even as I recommend that all serious students of the historical clarinet obtain a copy for themselves and another for their institution's library, I urge Drs. Myers and Fricke to produce a data file or tabulation of the clarinets. This would expand the genus of illustrated musical instrument catalog beyond the "coffee-table" book and better meet the needs of modern scholars, who have every right to demand the highest standards of a book describing such an important collection, published by such an important institution. Sir Nicholas would have been very proud of what's here, as it's a fine accomplishment, but even prouder had it been given greater utility through the best modern means available.

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Hugh Cheape. *Bagpipes: A National Collection of a National Instrument.* Edinburgh: National Museums Scotland, 2008. v, 54 pp.: 33 color illus., 24 black-and-white illus., CD-ROM. ISBN: 978-1-905267-16-3. £15.99 (paper).

The piping collection of the National Museums Scotland (NMS), Edinburgh, was largely assembled within three recent decades. From about twenty items in 1872, the collection by 2007 grew to more than 2,100 items, "the largest and most significant national and international col-

lection of such material in the public domain" (pp. 19–20). Included are bagpipes, fragments, accessories, instrument-making tools, documents, sheet music, and sound recordings. Portions are also displayed in the National Piping Centre, Glasgow, and the Edinburgh University Collection of Historic Musical Instruments. The collection is by no means limited in scope to Scotland or the United Kingdom. The CD-ROM describes a substantial bequest of instruments and documents from Jean Jenkins (1922–1990), an ethnomusicologist specializing in Islamic music.

The CD-ROM could easily stand on its own. It includes approximately ninety screens of prose and illustrations, forming a series of independent narratives. These are sometimes parallel to chapters of the book, but at other times introduce a new level of emphasis on selected topics. Beyond this, the disc includes a searchable catalog of more than two thousand records of the piping collection of the NMS as of 2007, as well as a discographical essay. The author, Hugh Cheape, was until recently head of the Scottish Material Culture Research Centre of NMS. His subtext is that surviving instruments—artifacts of the material culture of music—have a story to tell, and that the story may be at odds with received notions.

The subtitle of the book is doubly steeped in irony. Contrary to the pronouncements of many commentators, the Highland bagpipe—Scotland's "national" instrument—evolved relatively recently and in the shops of Lowland makers, the author argues. And despite the national celebration of this instrument, there was until recently no representative collection of it in Scotland. Addressing these twin paradoxes, Cheape gives a brief revisionist history of the loud, outdoor Highland pipe that has come to connote Scotland today. He gives equal attention, however, to two early types of quieter pipes that were in widespread use until the mid-nineteenth century: the pastoral pipes and the union pipes.

"An inherited conventional wisdom . . . suggested that the Highland bagpipe was originally hand-made in the Highlands with locally available materials such as holly, laburnum, bone and horn and that the earliest instrument was an analogue of today's bagpipe" (p. 134). This myth was long supported by a set of Highland bagpipes bearing the date 1409, which the NMS acquired by bequest in 1912. But researchers now believe that these pipes are a reconstruction dating from the late nineteenth century. Contrary to the myth of a Highland folk

tradition, researchers have found that the "great Highland bagpipe" was made in Lowland cities by professional makers who also produced pastoral and union pipes; all three types showed a diversity of form. Instead of native woods, makers from early times opted for tropical hardwoods such as Caribbean ebony and cocus, which were well suited to detailed work on the lathe.

Bagpipes of various types were played in Scotland from medieval times; a carved gargoyle at Melrose Abbey showing bagpipes appears to date from 1358. During the sixteenth century, "the typical instrument of the burgh pipers was a bellows-blown bagpipe with three drones set in a single large stock. This was generally a slightly smaller instrument than the great Highland bagpipe, and easier to maintain and to play for extended periods such as feasts and weddings" (p. 33). During these years, pipers were trained in clan-supported schools. The clan patronage declined in the eighteenth century following the Jacobite Wars, along with the schools. Cheape punctures another detail of the received myth when he reports that the great Highland bagpipe was "created in fact in the last quarter of the eighteenth century and adopted as archetype in the first quarter of the nineteenth century" (p. 131). Beginning in 1781, the Highland Society of London sponsored competitions that soon instilled the image of the piper as kilted Highland warrior. Cheape traces the Highland bagpipe's current form to the standardizing influence of such competitions, where first prize was a set of great Highland pipes. Such pipes accompanied army regiments across the globe as they advanced Britain's imperial ambitions.

Even before the Highland bagpipe evolved into a military or quasi-military instrument, other Scottish and British bagpipes were influenced by the stylistic demands of European concert music. Both the pastoral and union pipes, Cheape argues, were designed "to make bagpipe music appeal to sophisticated and discriminating audiences and to fit in a social and musical context of violin, piano or harpsichord, flute and oboe" (p. 80). In his *Compleat Tutor for Pastoral or New Bagpipe* (London, ca. 1746), John Geoghegan explained that the second octave was to be produced by overblowing. The chanter's narrow conical bore and small tone-holes were inspired by the baroque oboe. Tradition has it that the union or uillean pipe is an Irish instrument predating the pastoral pipe. Cheape disagrees, locating it within a neo-baroque tradition common to England, Scotland, and Ireland, as a later development of the pastoral pipe.

Among the eighteenth- and nineteenth-century makers discussed in some detail are Donald MacDonald, Hugh Robertson, and Adam Barclay, all of Edinburgh; Malcolm MacGregor of London; and William Gunn of Glasgow. Eighty-one makers from the British Isles are listed on the CD-ROM. Given that bagpipe makers are generally not covered in William Waterhouse's *The New Langwill Index* (London: Tony Bingham, 1993), this list offers a convenient starting point for researchers.

Cheape is well versed in the tangled political and cultural history of Scotland and the British Isles. He discusses, for example, the medieval Lordship of the Isles, which eased cultural exchanges between Ireland and western Scotland, and the Ossianic literary tradition, which brought the union pipe into London theaters during the 1790s. He is comfortable in the Gaelic tongue, to the point that he occasionally neglects to translate Gaelic phrases for his readers (pp. 60, 69, 136). Even in English, the author's lines seem at times to contain bardic elements of alliteration and echo: "the panegyric role of *piobaireachd* [piping] could realistically draw on or be grafted onto the unlettered but not untutored vernacular eulogy and elegy of the bard" (p. 66). Throughout the book, Cheape capitalizes the term Great Highland Bagpipe, as he does Small Pipes, Pastoral Pipes, Union Pipes, and Uillean Pipes, though not the generic words bagpipe, oboe, and violin. I suspect that these typographical obeisances are bids for safe passage in the culturally embattled field he is traversing (Piper, Highlands, and Islands receive similar treatment).

While the CD-ROM is searchable, the book has no index. The copious bibliography includes early and modern sources of both organology and relevant cultural history, including twenty-seven articles by the author. Taken together, this book and disc provide an eye-opening new perspective on bagpipes in Scotland and beyond, and a welcome gateway to further research.

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