While music theorists of the seventeenth century either attended to practical matters or provided speculative theory, practical theorists have captured the most attention in scholarly writing, most notably Rebecca Herissone’s *Music Theory in Seventeenth-Century England*. David Cram and Benjamin Wardhaugh’s book on John Wallis (1616–1703), however, concerns one of the most speculative of seventeenth-century writers on music. Wallis is scarcely mentioned in Herissone’s work (and only in connection with other writers of the time), even though his writings on music span forty years at the end of the century. But this Savilian Chair of Geometry at Oxford (1649–1703), who in addition to mathematics worked within language, logic, cryptology, theology, and philosophy, became known over his lifetime as a significant authority on the science of music.

The centerpiece of Wallis’s writings on music is “The Harmonics of the Ancients compared with Today’s,” an appendix to his 1682 edition of Ptolemy’s *Harmonics*. Surrounding this work are various letters, some written to Henry Oldenburg, secretary of the Royal Society, in 1664, and some published in the *Philosophical Transactions* of the Royal Society (1677 and 1698). The letters and appendix postulate ideas on the mechanical production of musical sound, the effects of music on the human person, the relationship between ancient thinking on music and seventeenth-century music in England, and (most prominently) the mathematical foundation of musical harmony. This edition situates these texts and topics within Wallis’s own intellectual life and within writings by other English music theorists at the time, while also tracking the Savilian Chair’s thinking on the subject (2). Readers come to know Wallis well as a thinker on music theory—his ideas, quirks, limitations, and legacy.

Wallis rarely discusses either practical music theory or the practicing musician, and Cram and Wardhaugh, who specialize in linguistics and early modern mathematics, respectively, handle the topic of speculative music theory adeptly. Other speculative theorists at the
time delve into the applied area, providing mechanical explanations or doing practical experiments, for example. Wallis stays with the familiar by talking about musical science only in relation to mathematics. The project seems to originally have had Jessie Ann Owens, a musicologist, as an additional editor (according to the Acknowledgements), but the lack of a music specialist does not, on the whole, affect the level of scholarship attained.

One major achievement of this edition is a sketch of Wallis’s trajectory as a musical expert, from his own admitted lack of musical expertise at the time of his first writing in 1664, to being an often-consulted scholar by the end of the century. The result is a helpful positioning of the Savilian Chair within the range of seventeenth-century music theorists and writers. The authors address the question of why Wallis became interested in musical matters in the first place, given his other areas of study. Why did he produce writings and letters on music? How did he reach a place of having his writing accepted into the world of musical discourse at the time? What were the mechanisms for this discourse? We also discover how Wallis introduced others to the matters of musical mathematics, including Thomas Salmon, a country clergyman and musical amateur who published three books on musical subjects. Salmon likely came to know musical mathematics through Wallis’s Savilian lectures, and his writing on music during the period 1672–1705 and his career as a musical amateur, culminating in his appearance before the Royal Society in 1705, “drew something both of general inspiration and of mathematical detail from the work of John Wallis” (19).

Comparing Salmon and Wallis demonstrates the latter’s emphasis on speculative theory, which sets him apart from nearly every other writer on music in the seventeenth century. While Salmon took on an experimental bent, aiming to “bring about practical change and to facilitate the practical demonstration of his musical ideas,” Wallis, “for all he had written about the theory of music, … never seems to have acquired a knowledge of practice” (18). This is the case with a common topic of both Salmon and Wallis—just intonation.

Cram and Wardhaugh’s first attention to Wallis’s writing on just intonation reveals the difficulty of the topic and the limitations of the edition. While the authors’ point is not to explain Wallis’s theory, the
description of Wallis’s writing on just intonation lacks necessary clarity. At times the lack of clarity pertains to terminology (such as what ‘scale’ refers to—a mode such as major? the gamut of earlier theory? some other abstract construct?). At times the lack of clarity results from the need for additional information. For example, the authors write, “In Wallis’s account, certain questions followed from this construction of the scale. The octave, the fifth, and the major third could each be divided mathematically into two parts, producing musically useful results: why not the fourth? Wallis gave some attention to the intervals that would result from a mathematical division of the fourth, with ratios 7:6 and 8:7” (4–5). Rather than describing the ‘attention’ given by Wallis to this situation, they left this incomplete. Only later in the Introduction and more importantly in the Editorial Notes is this hanging question more fully addressed, well after potential frustration would set in for the reader. Stronger cross-referencing, or alternatively the packaging of information in a single place within the Introduction, could have helped the reader navigate such concepts as Wallis’s ideas on tuning.

The need for clarity is necessary in part because Wallis’s ideas on just intonation are important historically. Based solely on a mathematical understanding of frequency ratios, larger intervals are divided into two smaller intervals by doubling the numbers within the larger ratio and interposing a number between the result. For example, the ratio of the fifth (3:2) is doubled (6:4), and a third number is placed between them (6:5:4). This results in two new intervals, the minor third (6:5) and the major third (5:4). Similar computations are carried forward to devise the interval of a major and minor second, though multiple versions of these are possible because of different starting intervals in the computation. Wallis essentially stops his divisions of intervals at the point where the ear can no longer hear the differences in the permutations. He could have divided intervals such as the fourth or the minor third further, resulting in intervals that would align with the ancients’ enharmonic and chromatic genera. But these genera had not been used in centuries, and seventeenth-century music did not include such subtleties of pitch because they cannot be produced vocally or heard clearly.
The authors note that “Wallis was eclectic rather than, perhaps, encyclopaedic in his interests, but there were very few even among the most versatile of his contemporaries who could have claimed to have made real contributions to so many fields” (2). Part of the value of this edition is filling out the dimensions of Wallis’s life, so to not reduce him to certain subjects, and to better understand his overall intellectual thinking. In all of his inquiries “he sought out topics on which he could engage in robust refutation,” most notably with Thomas Hobbes. “A combative credit and vigorous manner of writing … seem to have marked his interventions in musical topics too” (2). Cram and Wardhaugh’s use of “interventions” is an apt description for his reactions, responses, and refutations.

Other valuable observations of Wallis’s theory include his early advocacy of “coincidence theory,” where “reasonably frequent coincidence between vibrations [associated with musical sound] was a requirement for two sounds to be perceived as harmonious, … only possible if the frequencies of the two sets of vibrations formed a ratio of small whole numbers” (3). This theory was later dropped, or at least not discussed by Wallis’s in his writings. The authors also address the question of Wallis’s sources and his claim of independence from earlier writers on the mathematics of music. “Certainty about these question is regrettably elusive, and thus the beginnings of Wallis’s thinking about music and the exact nature of his reliance on the writings of others are to some degree irrecoverable.” Nevertheless, “what is certain is that by the end of May 1664 he had read some of the key texts: Ptolemy and Euclid among the ancients; Boethius, Kepler, Mersenne, and very probably Descartes among the moderns. He was known to Oldenburg and now to the Royal Society to be interested in music, and he had committed himself to positions concerning musical methodology and the correct description of the diatonic scale which he would never substantially modify” (7).

The most significant musical undertaking of Wallis was his translation of Ptolemy on music, motivated by a desire to see the whole Greek musical corpus in print (12). It may have also resulted from his responsibilities as Savilian Professor, in particular his responsibility to the materials on mathematical sciences to be found in the Bodleian. The most interesting motivation of Wallis’s writing uncovered by the
authors concerned the publication of one of his later letters. They suggest that Wallis concocted an opportunity to re-present in public his thinking about the mathematics of musical tuning, by responding in *Philosophical Transactions* to a question from an unknown source. The question was quite specific (how to divide the musical string into 12 semitones) and whether Simpson's solution from 1667 was correct. The unknown source could well have been Wallis himself, and the sketch of Wallis's intellectual life provided by the authors makes this possibility seem a reality.

The value of this edition naturally lies in the presentation of the texts themselves. As with all editions in Ashgate's *Music Theory in Britain, 1500–1700: Critical Editions* series, Wallis's texts retain much of their original look. They are easily read, though some of the figures, while rendered accurately and clearly, utilize font that is unnecessarily small. It would have been good to also see more than the three original figures that were reproduced. A concise and helpful Editorial Note precedes each separate piece of Wallis's writing, expanding the broader context provided in the Introduction. The endnotes for each piece are one of the most valuable items in the edition, helping the reader understand Wallis's writing both in its content and in its historical context.

Though there was cross referencing between the Introduction and the editorial notes, one wished, at times, for an expansion of the discussions in the Introduction. For example, the content of the following editorial note would have been helpful in the Introduction because of the clarity and directness it brings: “This sentence is crucial to an understanding of what Wallis intended to achieve in his musical writings; for him it was and remained axiomatic that the description of music provided by musical notation and by the writings of practitioners ... was not a true description of the sounds that were heard in seventeenth-century performances. Thus Wallis's mathematical theory would be an attempt to provide a true description: an accurate account of what the ear and the voice apparently achieved by innate instinct” (64). In short, the notes contain some of the most valuable information and conclusions by the authors, including cross references, terminological explanations, and context grounding. Because of the mathematical nature of Wallis's writing, the notes also provide critical
explanations or calculations of the math, which is particularly helpful for readers who do not have the background to understand Wallis’s thinking directly from his writing and figuring. Notes that begin, “In other words . . .” are greatly appreciated.

Cram and Wardhaugh’s edition of Wallis’s writings provides the first modern edition of some of these works. Furthermore, it brings a relatively unknown (to the musical world, at least) into the broader discussion of seventeenth-century musical life. In this way it fills out our still somewhat impoverished understanding of intellectual life surrounding music during the century, giving a good sense of how contemporaries perceived Wallis and, more broadly, the field of musical science and speculative theory.


Settling the Peace of the Church emerged from the 2012 conference of the Dr. William’s Centre for Dissenting Studies in London, which marked the 350th anniversary of the Act of Uniformity. The venue and forum shaped the contours of this collection, which largely focuses upon the development of nonconformity and dissent. Ordinarily this would be explained in an introductory chapter, which according to custom would then go on to provide a breakdown of each article to highlight its specific contribution to the volume and place within its larger theme. In an unusual move, the editor N. H. Keeble eschews these conventions. Instead, he offers a more general introduction to the Act of Uniformity itself, tracing its origins, implementation, and repercussions. Though this format sacrifices the summary of individual articles, it has the advantage of providing an overview of the subject for non-specialists. The introduction in turn serves as the background against which to read the subsequent essays. The Act of Uniformity, Keeble argues in the introduction, is important precisely because of, rather than in spite of, its failure: though it aimed to ‘settle the peace of the church’, it nevertheless brought in its wake the persecution of nonconformity and contributed to the development of dissent and