17 Computer Collation of Divergent Early Prints in the Byrd Edition

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Abstract

It is generally assumed that two copies of a publication of music made by the same publisher, bearing the same date, and containing corresponding numbers of pages and identical layouts will contain identical music. This comparative study of multiple copies of "identical" prints of music by the English Renaissance composer William Byrd demonstrates that this is not always the case. Overlaid images of source-pairs show that hand-typesetting permitted small changes to be made from copy to copy within a single print run.

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17.1 Editorial History of the Byrd Edition

Only two volumes remain to be published to complete the new edition (Stainer and Bell) of the music of William Byrd (1540-1623). This edition, in progress since 1972, evolved out of an earlier attempt by Thurston Dart to reissue its predecessor, Fellowes's *Collected Vocal Works of William Byrd* (1923-1950), with corrections made to the original plates. The remaining volumes (to be edited by David Mateer and the authors) will contain the composer's first two published songbooks: *Psalmes, Sonets and Songs* (1588) and *Songs of Sundrie Natures* (1589). Although this series has gained a reputation as one of the most thoughtful of modern editions, the remaining volumes pose editorial challenges that became the catalyst for the computerized collation method described herein.

Fellowes's highly prescriptive editing was geared toward the promotion of a performance style he thought appropriate to the music. It refused to take the organic nature of the liturgy into account in *Gradualia* [re-edited in Vols. 6 and 7 of the new edition]. The method included inappropriate transpositions, modern accent marks to highlight cross-rhythms, and dynamic markings as well as an inconsistent policy toward note values (some halved, some left in original values). These devices have become not only unnecessary, owing to more widespread understanding of appropriate performing styles for this music, but also offensive to those who, as both scholars and performers, have devoted serious effort to an understanding of the music and need a notational representation reliably close to the original.

17.1.1 Manual Editing: The Problem of Print Variants

The editors of the new Byrd Edition (Brett 1976) started their task with a sense that both directions of their endeavor—toward the original texts and toward the modern performer/scholar—deserved extraordinary respect. As a result of intensive work on the sixteenth-century prints of the music (Andrews 1964: 5ff), it became increasingly clear that, unlike many composers of his time, Byrd took an active role in print production. We noticed minute changes of state within the sheets of single editions as well as more major changes from edition to edition.

This situation not only signaled a special situation but also demanded a special response. The foundation of this work had been contained in articles on editions of the 1588 *Psalmes, Sonets and Songs* and the Masses respectively (Andrews 1963, 1964; Clulow 1966). But it was the details uncovered as the result of the policy of looking at every extant copy of the print, a policy that was not normally adopted in editing music from printed sources, that led to a new apprehension of Byrd's engagement at the level of musical detail.

For his first two songbooks there is good reason to suspect that Byrd's involvement in the editing at the press of Thomas East (the major publisher of his works) was, if anything, more extensive than the effort made in his other printed works (although Byrd was certainly meticulously attentive to the texts of the numerous music prints for the Roman Catholic liturgy he produced throughout his career).

In the original edition of Byrd's *Songs of Sundrie Natures* there are many paste-in corrections. Among printers of the era, paste-ins were well known to be a particularly laborious method of press correction; this and other evidence strongly suggests these corrections were undertaken at the behest of the composer himself. The work was also reprinted in a corrected edition and printed yet again by Lucretia East in 1610. Altogether 103 part-books survive. This makes the task of its collation quite daunting.

17.1.2 An Example: The Four Prints of the *Psalmes*

The *Psalmes* collection was the first print Byrd produced after the notorious economic failure of his joint publication with Thomas Tallis (Monson 1977: viii; Fenlon and Milsom 1984: 140f). It too was subject to a most exacting editorial program. At Byrd's direction, the work was completely reset at East's press and reprinted several times to incorporate the composer's changing views on the appropriate mensuration signs for the music of the collection. The result (Andrews 1963: 5ff) was that the publication exists in four separate editions: three from around the original publication date of 1588, and a further one that has now been re-dated 1606-07 (Smith 1999).

In an earlier edition of the *Psalmes*, Brett (1965: vi) had assigned the first edition as copy text and had incorporated corrections from the second

and third, largely ignoring the fourth on the grounds that its regularized word underlay and standardized spelling were the work of a tidy-minded compositor. In the light of experiences encountered in editing the *Gradualia* and John Morehen's edition of the 1611 *Psalmes, Songs and Sonnets* (Vol. 14), we believe that assumptions about the best way of establishing the text need to be rethought, particularly in relation to the music Byrd printed in his lifetime.

Owing to the number of editions and copies, the collation for the last two volumes of the Byrd Edition will undoubtedly lead to new conclusions about the state of the text. It is hoped that the computer methodologies described below may help both to uphold the editorial standards of the Byrd Edition and to yield a better sense of Byrd's extraordinary involvement in the printing process itself.

17.2 An Analog Solution: The Hinman Collator

The scholarly fields of editing and textual criticism were revolutionized in the early 1960s when Charlton Hinman (1963a) published his study of proof-reading and press corrections within the famous folio edition of Shakespeare's plays. Hinman's work was based on the study of the 80 copies of this single edition that are held in the Folger Shakespeare Library (1963b). It was a project for which he and Arthur Johnson developed and perfected the first mechanical-optical instrument—now called the Hinman Collator—for comparing the texts of different copies within a single typeset edition.

Hinman's collator houses a complex of lenses, mirrors, and motors that work to produce a stereoscopic effect as two images rapidly alternate on a screen, creating an optical illusion of superimposed pages of a single text. Once the pages appear to be superimposed, any variants among them stand out as blurred images in an otherwise clear reproduction. Thus Hinman's machine proved effective for noting the subtle variants that occur in cases where the Renaissance printer had unlocked the forme to correct the text during a press run, or when press workers had made other small changes with a pen in selected copies. With this machine, Hinman (1963a) found several hundred instances of textual variance within the supposedly identical copies of Shakespeare's single edition. It was soon adopted by editors as a standard collation tool.

Yet it had serious limitations. The Collator was designed to compare pages from original copies, but few libraries other than the British Library or the Folger itself could boast of more than one copy of an edition like the Folio. More likely the copies would be separated by thousands of miles. Furthermore, due to the intricacy of its design, it remains an unwieldy and difficult machine to operate, or even to store, and it is indeed expensive.

Inspired by these problems, a number of inventors brought out small-scale, so-called Poor Man's collators in the later 1960s (Levin 1966: 25f; Dearing 1966: 149-58). These were designed to superimpose the images of microfilmed and photocopied pages, which could be moved from one source location to another. Due to the problems of resizing and curvature of images in the photocopying or filming processes, however, these machines proved to be somewhat less effective than Hinman's.

Already by 1978, one inventor argued (Rothman 1978: 130-36) that most scholars had abandoned the superimposition method altogether, as he introduced an ingenious device to ease the work of the old eye-and-hand method for comparing texts side by side.

17.3 A Digital Method of Print Collation

A method for superimposing texts with scanners and computers was introduced several years ago (Salesmans 1994-5). We designed a similar system to computerize the highly successful technique of superimposing copies with transparency film that John Milsom pioneered in his work on the Tallis/Byrd *Cantiones* (1996). The equipment involved, although it can be expensive, is available to many scholars and may already be conveniently set up at some research libraries.

Like other post-Hinman methods, it respects the realities of research conditions, as it is designed to work with various kinds of image-reproduction technologies including photocopies, microfilm, Copy-flow prints, facsimiles, and, at the higher end, digital scans of original prints.

Advantages of the new method include new possibilities for preserving and filing the variants that are discovered in the collation process, and a use of the Web that has special significance for the collaborative effort of editing the final two volumes of the Byrd Edition.

Figure 1. "Identical" pages from the third edition of Byrd's *Psalmes, Sonets and Songs* from (left) the Huntington Library, San Marino, California, and (right) the Library of the University of London copies before graphical editing. Used by permission.

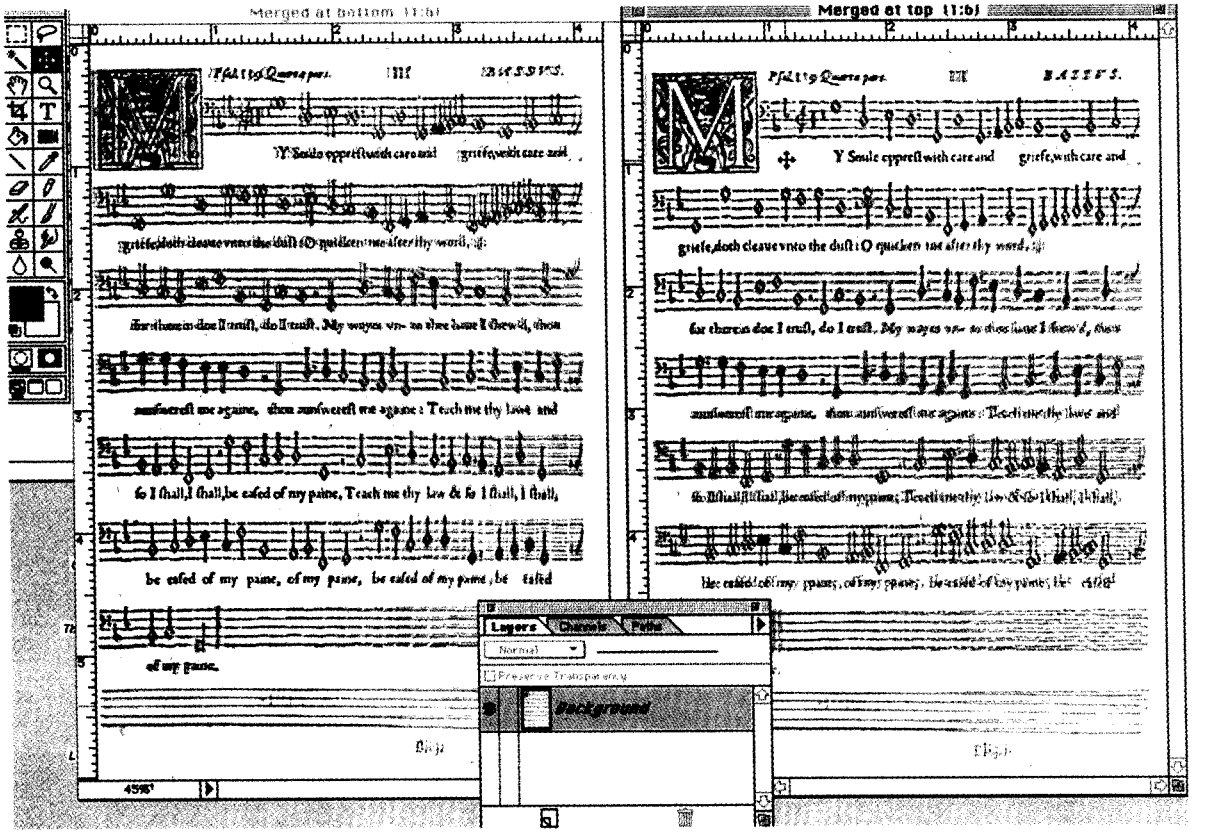
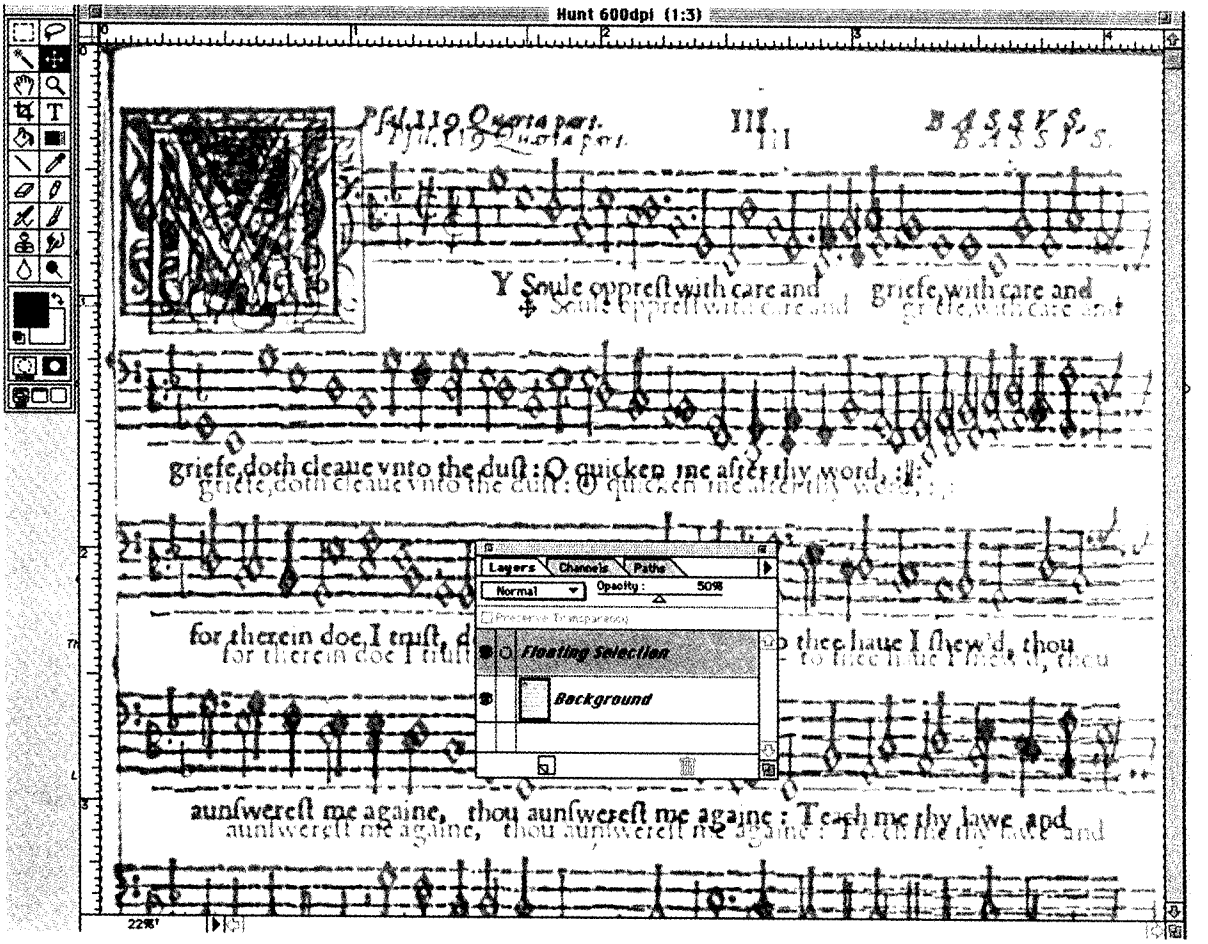


Figure 2. The London copy of the same page superimposed on the Huntington copy during the graphical editing. Used by permission.



To collate two copies of the same edition with computers, the first step is to scan the pages and then open them on-screen in a design software program such as Adobe *Photoshop* or *CorelDraw*. Figure 1 (left) shows a page from a copy of the third edition of Byrd's *Psalmes, Sonets and Songs* from the Huntington Library collection in *Photoshop*, while Figure 1 (right) shows the same page from the copy of the University of London.

The next step is to select one of the images using *Photoshop*'s SELECT ALL command and then to paste one image onto the other (see Figure 2). This is achieved by simply moving the mouse to the unselected image and

hitting the PASTE command. In Figure 2 the same London copy rests on top of the Huntington copy.

A standard feature of both *Photoshop* and *CorelDraw* is an adjustable OPACITY tool. Using this tool, one may make both images more and more translucent until they appear as transparencies on the screen. If, for example, the London copy is altered to 70% opacity, the Huntington copy underneath it will become visible again, and, when changed to 30%, the Huntington copy will appear again as the stronger image.

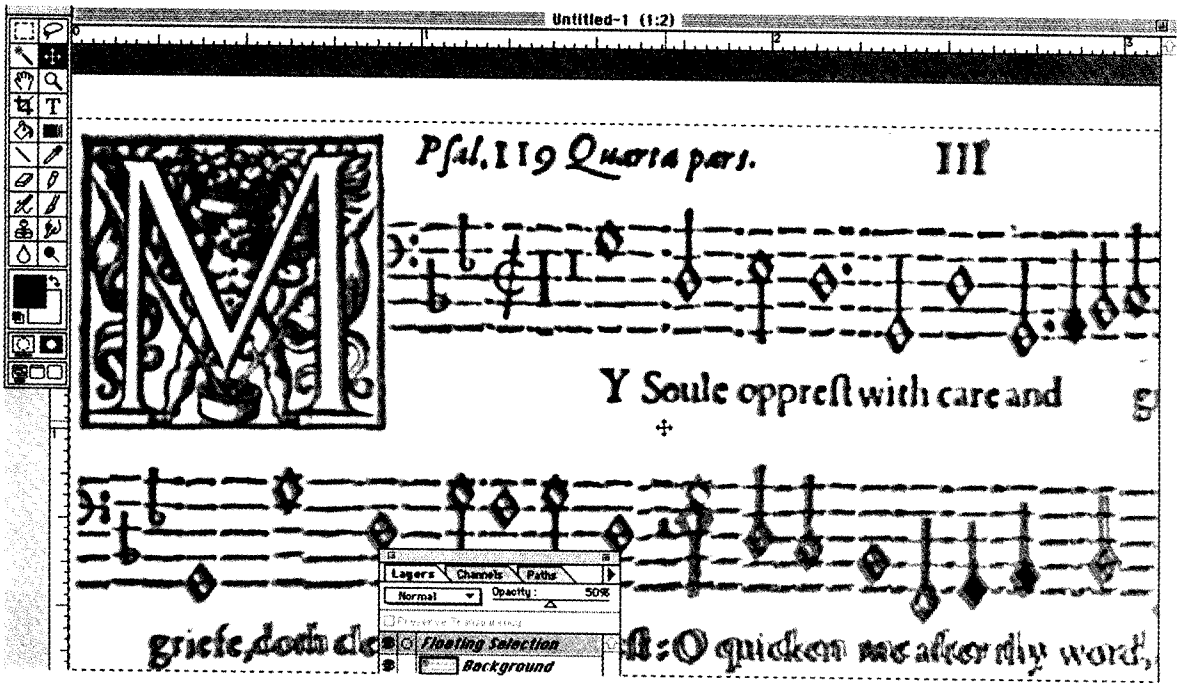
Finally, to superimpose these images, it is necessary only to place one directly on top of the other. *Photoshop* provides a MOVE tool for this that is operated by the mouse. Thus the success of the operation depends on the user's own hand-eye coordination. A zooming function magnifies the combined images, however, and eases the process considerably (see Figure 3).

The problems of curvature in photocopied or microfilmed material noted by critics of the superimposition method do appear here. Note, for example, that while certain sections line up relatively clearly, in other sections the images diverge because of the bending of the pages in reproduction. In this case the problem is easily overcome. By bringing the same images in two different superimposed positions up on the screen, the user simply moves from one superimposed set to the other to check for all variants on the page.

Once they are discovered, the study of the variants is greatly enhanced by the ZOOM function. This is a useful feature of the Hinman Collator too, but is not available in many of its successors. Zooming in on the area of interest makes pronounced the incongruous shape of one of the notes in question (see Figure 3). It suggests that the variant itself was the result of a correction by hand, and not the substitution of one type-piece for another during a stop-press correction.

Thus far it has been demonstrated that the computer has the capacity to superimpose copies from a single edition and thereby achieve results similar to those of the Hinman Collator and its successors. It should also be mentioned here that it shares the tedium and weariness to the eye that seem to be a part of all such methodologies. But there are many further advantages to the computer system.

Figure 3. The superimposed images: a magnified view. Used by permission.



First and foremost, a computer-detected variant is not a discovery of the moment in an optical illusion, but a tangible digital object that may be saved as a file and stored away for later study, away from the discomfiture of the research library. Once saved as a digital image, the variant may be further manipulated, compared to others, or prepared on the computer as camera-ready art for publication.

More important for the present project of editing Byrd's early collections of printed songs, the digitally-saved variant may also be shared among other scholars for collaborative analysis. Although there are other methods, one of the most exciting opportunities for sharing such files is to convert them to HTML and place them on the Web.

Ultimately, with such a methodology it is hoped that the full advantages of collaboration will profitably come to bear on the project of collating two collections by Shakespeare's most prominent musical contemporary, William Byrd, despite the fact that, like many of the copies of the editions themselves, the collaborators are separated by thousands of miles.

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