

PRESS VARIANTS IN Q₂ HAMLET:
AN ACCIDENT ON N(OUTER)

by

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BECAUSE of stop-press correction on certain formes and the retention of sheets showing the uncorrected state(s), the seven surviving exemplars of Q₂ *Hamlet* (1604–5) are not identical. When John Dover Wilson collated Q₂ in the 1930s, only six of these seven exemplars were known (the Polish one was undiscovered), and with this new exemplar and an altogether more careful collation Ann Thompson and Neil Taylor have, for their Arden3 edition, added eight variants to the eighteen variants found by Wilson.¹ Thompson and Taylor's abbreviated labels for the exemplars (followed in this essay) are different from Wilson's, so for the sake of readers comparing their work the following mapping is given:

Dev[onshire] = Huntington Library, so here HN
 Huth = Yale Elizabethan Club, so here Y²
 Folg[er] = Folger Library, so here F
 B[ritish] M[useum] = British Library, so here L
 Cap[ell] = Trinity College Library Cambridge, so here C²
 Grim[ston] = the earl of Verulam's exemplar at the Bodleian, so here VER
 Unknown to Wilson = University of Wroclaw, so here Wro

Of the twenty-six variants, ten are clustered on the outer side of the book's final full sheet, N. The forme N(outer) exists in three states, listed in figure 1 according to which of the seven exemplars contains each combination of variants and with the supposed order of correction (established by Wilson) running down the page. Thus the uncorrected (or earliest-known) state is witnessed in exemplars F, HN, Y²,

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1. John Dover Wilson, *The Manuscript of Shakespeare's HAMLET and the Problems of Its Transmission: An Essay in Critical Bibliography*, vol. 1: The Texts of 1605 and 1623, 2 vols., Shakespeare's Problems, 4 (Cambridge: Cambridge Univ. Press, 1934), 123–124; William Shakespeare, *Hamlet*, ed. Ann Thompson and Neil Taylor, The Arden Shakespeare (London: Thomson Learning, 2006), 479n1, 524–525.

F, HN,	thirtie	pall	sellingly	dosie	yaw	neither	in	too't	reponsiue	be	hangers		sir	
Y ² , Wro														
L	thereby	fall	sellingly	dazzie	raw	neither,	in	doo't	reponsiue	be	might	hangers	so	sir
C ² , VER	thereby	fall	fellingly	dazzie	raw	neither,	in	doo't	responsiue	be	might	hangers	so	sir

FIGURE 1. The ten press variants on N(outer).

and Wro, the first corrected state is uniquely witnessed in exemplar L, and the last (known) corrected state is witnessed in exemplars C² and VER.

Fredson Bowers's analysis of the reuse of headlines in skeleton formes showed that it is highly likely that Q₂ *Hamlet* was set by two compositors, each working almost exclusively on his own sheets and providing type to each of two presses.² Bowers presented his evidence using the post-war convention of assigning an upper-case roman numeral to each headline and listing the pages it topped (figure 2), but the same data are here also presented using the conventions developed by Peter W. M. Blayney and G. Thomas Tanselle (figure 3) that allow the patterns to be seen more clearly. In figure 3, boldface is used when one compositor lent the other a headline, which practice will be discussed in detail shortly.

It is clear that four skeleton formes were set up, each containing four headlines (thus sixteen headlines, a-p). The skeletons were for the most part consistently used in two pairs, containing headlines a-h and i-p. The pair containing headlines a-h was used for sheets B, C, D, F and I and the pair containing headlines i-p was used for sheets E, G, H, K and L, while sheets M and N break this pattern.

The half-sheet O was imposed and machined with half-sheet A, so that sheet O+A contributed three leaves to the book: the leaf conventionally designated A₁ (presumably blank on both sides) is absent in all exemplars, the leaf conventionally designated A₂ holds the title-page (with A₂^v blank) and O₁^r, O₁^v, and O₂^r hold the last three pages of the book (with O₂^v blank).³ Thus sheet O+A used only three running-titles: V=b for O₁^r, XIV=j for O₁^v, and XV=k for O₂^r. Sheet O+A could not be incorporated into a regular pattern of headline reuse with the other sheets and for clarity it is omitted from further discussion. Within each pair of skeletons, one was for the most part consistently used for the outer and the other for the inner forme in sheets B-N. It is possible for one compositor working with one press to construct and use skeletons in this way, but there is no reason to do so and it would put him to unnecessary trouble. If we suppose two compositors and two presses, however, the skeletons would have provided a convenient orderliness to the processes of composition, imposition, and distribu-

2. Fredson Bowers, "A Definitive Text of Shakespeare: Problems and Methods," *Studies in Shakespeare*, ed. Arthur D. Matthews and Clark M. Emery, Univ. of Miami Publications in English and American Literature, 1 (Coral Gables, FL: Univ. of Miami Press, 1953), 11-29 (p. 19); Fredson Bowers, "Shakespeare's Text and Bibliographical Method," *Studies in Bibliography* 6 (1953-4), 71-91 (pp. 79-80); Fredson Bowers, "The Printing of *Hamlet*, Q₂," *Studies in Bibliography* 7 (1955), 41-50; Fredson Bowers, "Addendum: The Printing of *Hamlet* Q₂," *Studies in Bibliography* 8 (1956), 267-269.

3. Since all we have is an unsigned leaf holding the title-page, calling it A₂ is a bibliographic convenience and should not be taken to imply certainty that an A₁ existed.

I = a	B ₂ ^v C ₁ ^v D ₁ ^v F ₁ ^v I ₃ ^v N ₃ ^v	IX = n	E ₁ ^v G ₁ ^v H ₁ ^v K ₁ ^v L ₃ ^v M ₃ ^v
II = d	B ₂ ^r C ₂ ^r D ₂ ^r F ₄ ^r L ₄ ^r	X = m	E ₂ ^r G ₂ ^r H ₂ ^r K ₄ ^r L ₄ ^r M ₂ ^r
III = e	B ₁ ^v C ₃ ^v D ₃ ^v F ₃ ^v I ₁ ^v N ₁ ^v	XI = p	E ₃ ^v G ₃ ^v H ₃ ^v K ₃ ^v L ₁ ^v M ₁ ^v
IV = f	B ₄ ^r C ₄ ^r D ₄ ^r F ₂ ^r I ₂ ^r N ₂ ^r	XII = o	E ₄ ^r G ₄ ^r H ₄ ^r K ₂ ^r L ₂ ^r N ₄ ^r
V = b	B ₃ ^r C ₁ ^r D ₁ ^r F ₁ ^r I ₁ ^r M ₁ ^r O ₁ ^r	XIII = i	E ₁ ^v G ₃ ^v H ₃ ^v K ₃ ^v L ₃ ^v N ₃ ^v
VI = c	B ₄ ^v C ₂ ^v D ₄ ^v F ₂ ^v I ₄ ^v N ₂ ^v	XIV = j	E ₂ ^v G ₄ ^v H ₂ ^v K ₄ ^v L ₄ ^v N ₄ ^v O ₁ ^v
VII = h	[B ₁ ^r] C ₃ ^r D ₃ ^r F ₃ ^r I ₃ ^r M ₄ ^r N ₁ ^r	XV = k	E ₃ ^r G ₁ ^r H ₁ ^r K ₁ ^r L ₁ ^r M ₃ ^r O ₂ ^r
VIII = g	B ₃ ^v C ₄ ^v D ₂ ^v F ₄ ^v I ₂ ^v M ₄ ^v	XVI = l	E ₄ ^v G ₂ ^v H ₄ ^v K ₂ ^v L ₂ ^v M ₂ ^v

FIGURE 2. The pattern of headline reuse discovered by Bowers.

Sheet		Outer forme				Inner forme			
X	Y	1 ^r	2 ^v	3 ^r	4 ^v	2 ^r	1 ^v	4 ^r	3 ^v
B		—	a	b	c	d	e	f	g
C		b	c	h	g	d	a	f	e
D		b	g	h	c	d	a	f	e
	E	i	j	k	l	m	n	o	p
F		b	c	h	g	f	a	d	e
	G	k	l	i	j	m	n	o	p
	H	k	j	i	l	m	n	o	p
I		b	g	h	c	f	e	d	a
	K	k	l	i	j	o	n	m	p
	L	k	l	i	j	o	p	m	n
	M	b	l	k	g	m	p	h	n
N		h	c	i	j	f	e	o	a

FIGURE 3. Bowers's pattern of headline reuse represented using the Blayney-Tanselle conventions.

tion. The advantage for one compositor of working with two skeletons is that it allows him to impose and lock up in the chase the forme next required by the press before the press has finished machining the current forme.

John Russell Brown's examination of two distinctive spelling habits in Q₂ *Hamlet* corroborated Bowers's findings,⁴ as did W. Craig Ferguson's discovery that two distinct roman typefaces are used in the book in the same pattern of divided labour suggested by Bowers's analysis of headline reuse and Brown's spelling analysis.⁵ Adrian Weiss's scathing dismissal of Ferguson's book did not reject this

4. John Russell Brown, "The Compositors of *Hamlet* Q₂ and *The Merchant of Venice*," *Studies in Bibliography* 7 (1955), 17–40.

5. W. Craig Ferguson, *Pica Roman Type in Elizabethan England* (Aldershot: Scolar Press, 1989), 15.

discovery, and elsewhere he confirmed it.⁶ Further confirmation was provided by Eric Rasmussen's analysis of the reappearance of distinctively damaged type throughout the book.⁷ These studies all point the same way: two compositors using distinct sets of type divided the work, with one (compositor X) taking sheets B, C, D, F, I, and N and setting them in Lyon-a type using his own pair of skeleton formes, and the other (compositor Y) taking sheets E, G, H, K, L and M and setting them in Lyon-b type using his own pair of skeleton formes.

None of this evidence can establish the order that the formes went through the press, since any arbitrary order is possible once we accept that printers often worked on several books at once rather than racing to complete each one before turning to the next, and that they did this to regulate the work-flow of the whole printshop.⁸ However, the rational sequence of working alphabetically through the sheets of this book and maintaining a consistent pattern of alternating the sides (inner and outer) printed first makes the best sense of the evidence of type and headline reuse. The only alternative sequence that fits the evidence equally well is reverse alphabetical order, from the end of the book to the beginning. Working that way, printers might easily paint themselves into a corner, since in the event of miscalculation of the length of a book it is harder to extend the beginning than the end. Although extra leaves or gatherings could in principle be added anywhere in a book, Q₂ *Hamlet* has an unmovable head-title before the first lines of the play that was presumably intended from the outset. The trouble taken to make attractive beginnings to books suggests that publishers expected prospective buyers to examine them more closely than the ends. We may assume, then, an alphabetical progression of sheets and alternation of sides. This granted, the pattern of headline reuse might explain the clustering of variants, ten out of twenty-six, on a single forme, N(outer).

Bowers showed that each compositor kept to his own eight headlines until near the end of the work. With the end in sight, compositor X imposed two of the pages of the outer forme of his last full sheet, N₃^r and N₄^v, using headlines i and j that he borrowed from compositor Y, who had used them on L₃^r and L₄^v. Similarly, compositor Y imposed two of the pages of the outer forme of his last full sheet, M₁^r and M₄^v, using headlines b and g that he borrowed from compositor X, who had used them on I₁^r and I₂^v. (The movements are shown in boldface in figure 3.) I have called this 'borrowing' on the assumption that the compositors worked simultaneously and swapped headlines. If the compositors were not working simultaneously, the pattern of headline reuse requires that to-

6. Adrian Weiss, "Review of W. Craig Ferguson *Pica Roman Type in Elizabethan England* (Aldershot: Scholar, 1989)," *Papers of the Bibliographical Society of America* 83 (1989), 539-546; Adrian Weiss, "Bibliographical Methods for Identifying Unknown Printers in Elizabethan/Adriatic Books," *Studies in Bibliography* 44 (1991), 183-228.

7. Eric Rasmussen, "*Blindness and Insight: Damaged Type, Damaged Eyes, and Q₂ HAMLET*": *Internet Shakespeare Editions* Univ. of Victoria, <http://internetshakespeare.uvic.ca/Library/Criticism/textualstudies/erasmussen.html>, 2008.

8. D. F. McKenzie, "Printers of the Mind: Some Notes on Bibliographical Theories and Printing-house Practices," *Studies in Bibliography* 22 (1969), 1-75; Adrian Weiss, "A 'Fill-in' Job: The Textual Crux and Interrupted Printing in Thomas Middleton's *The Triumphs of Honor and Virtue* (1622)," *Papers of the Bibliographical Society of America* 83 (1999), 53-73.

wards the end of his job, one of the compositors made up and used an extra pair of headlines that he did not need, and that an extra headline was then used by the other compositor for most of his work, only to be abandoned near the end of his job in favour of a different one of the first compositor's headlines. If the swapping of headlines by two compositors working simultaneously is accepted, it does not matter which of them did this first. The important point is that they invited trouble since they were in fact setting to slightly different measures.

Fresh examination of all seven of the exemplars shows that the two compositors' sticks were not set to the same width. On pages where there are two or more lines set as prose, the width of the stick can be measured because type was justified by the insertion of spaces between words already set, or by changing spellings and abbreviations, rather than, as was done with verse, by adding spaces to the end of the line. Thirty-six pages of Q₂ *Hamlet* have such measurable passages, twelve of them set by compositor X and twenty-four by compositor Y. Appendix 1 shows the width of the stick (the measure) for each of these thirty-six pages in each of the seven exemplars. The readings fluctuate around 98 millimetres, but statistical analysis shows a small yet significant difference between their readings: compositor Y set his pages around 0.78 millimetres wider than compositor X. Necessarily the headlines varied by this amount too although they cannot be measured directly as they begin and end with spaces. When compositor X borrowed one of compositor Y's headlines, he ought to have either removed a thin space from this headline to match the page of type, or else added a thin spacing shim, a reglet, along a vertical edge of the page of type to widen it to match the headline.

On compositor X's forme N(outer), the pages set with compositor Y's headlines are N₃^r and N₄^v. If we allow images of an impression taken from the forme (using the Huntington exemplar) to stand for the forme itself (with rotations and reflections as necessary), figure 4 represents how the type for N(outer) was imposed in what Wilson claimed is the uncorrected state as witnessed in the Folger, Huntington, Yale, and Wrocław exemplars and figure 5 shows what an impression taken from that forme of type would look like. In both figures, highlighting shows the areas where type was adjusted to make the ten known corrections in the two later states: eight witnessed in the unique British Library exemplar and a further two corrections witnessed, together with those previous eight, in the Cambridge and Bodleian exemplars. The adjustments highlighted here include not only the altered readings, but also other type noticeably shifted in making them. Yet more type may have been temporarily disturbed to make these corrections but then reinserted into the forme in precisely its previous location and so not detectable from the printed books.⁹ As can be seen from figure 4, the most extensive adjustment was made in the type just underneath headline i on N₃^r,

9. The extent of type disturbance was established by laying upon a facsimile of one exemplar a transparency made from a facsimile of another exemplar, scaled so that undisturbed type was perfectly superimposed. This revealed absolute differences and by sliding the transparency left and right to find runs of type that could be aligned in the two images it was possible to see where such a run was moved to a new location as a single unit. The results were checked using downloaded digital images from the Shakespeare Quartos Archive website, which were rescaled, rotated, rendered opaque, and placed one upon another using the open-source GNU Image Manipulation Program (GIMP) software.

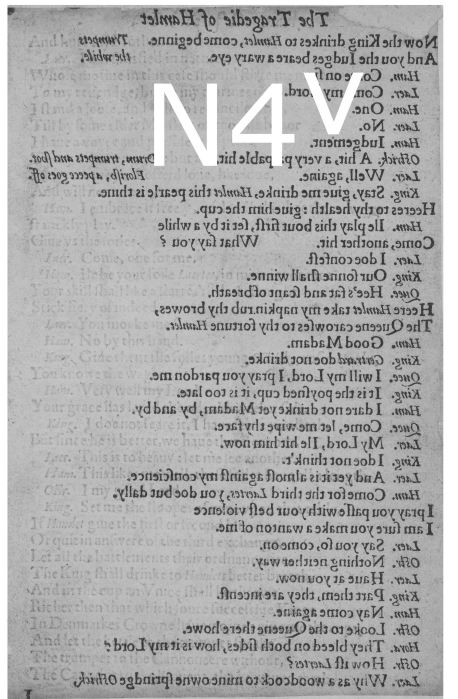
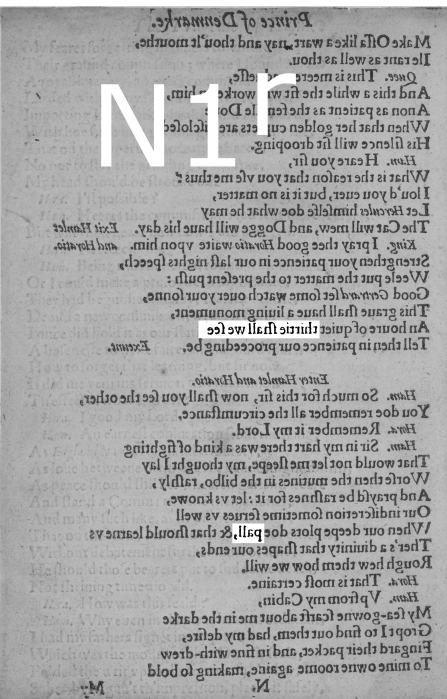
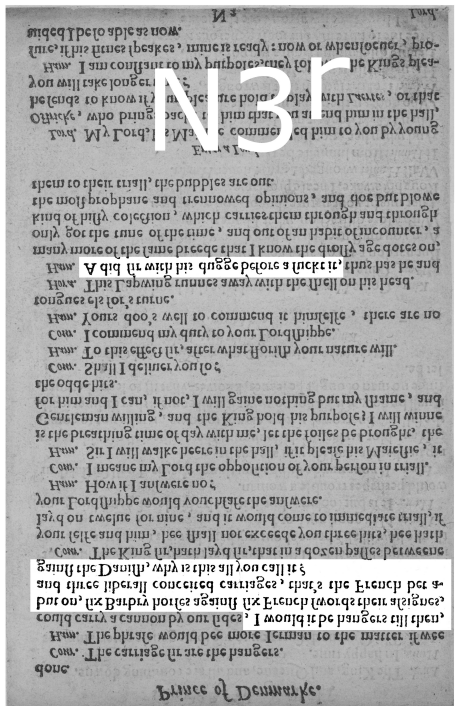
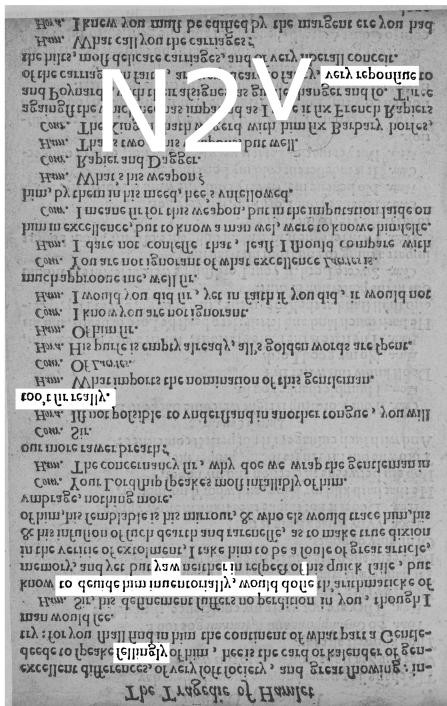


FIGURE 4. The imposed type for forme N(outer).

The Tragedie of Hamlet

Now the King drinks to Hamlet, come beginne. *Trumpets*

And you the Iudges beare a wary eye.

Lear. Come on fir.

Ham. Comemy self.

Lear. No.

Ham. Iudgement.

Offick. A hit, a try pable hit. *Drum, trumpets and foot.*

Lear. Well, againe. *Flourish, a peece goes off.*

King. Stay, giue me drinke, Hamlet this pearle is thine.

Heeres to thy health: giue him the cup.

Ham. Ile play this bout firft, fee it by a while

Come, another hit. What fay you?

Lear. I doe confest.

King. Our sonne shall winne.

Quee. Hee's fat and feant of breath.

Heere Hamlet take my napkin rub thy browes,

The Queene carowles to thy fortune Hamlet.

Ham. Good Madam.

King. *Gertrud* doe not drinke.

Quee. I will my Lord, I pray you pardon me.

King. It is the poyfoned cup, it is too late.

Ham. I dare not drinke yet Madam, by and by.

Quee. Come, let me wipe thy face.

Lear. My Lord, Ile hit him now.

King. I doe not think so.

Lear. And yett is almost againft my confcience.

Ham. Come for the third *Laertes*, you doe but dally

I pray you paffe with your best violence

I am fure you make a wanton of me.

Lear. Say you fo, come on.

Off. Nothing neither way.

Lear. Haue at you now.

King. Part them, they are incens'd.

Ham. Nay come againe.

Off. Looke to the Queene there howe.

Hera. They bleed on both fides, how is it my Lord?

Off. How is't *Laertes*?

Lear. Why as a woodcock to mine owne fpringe *Offick*

The Tragedie of Hamlet

Prince of Denmark.

excellent differences, of very loftie fey, and great flowing, in
 dede to fpeak (I giue) of him, hee is the card or kalender of gen-
 try: (for you shall find in him the countenance of what part a Gentle-
 man would be.)

Ham. Sir, his difcretion suffers no perturbation in you, though I
 know to deuide him inwardly, would dofe the rharmanke of
 memory, and yet buye neither in refpect of his quick talie, but
 in the vertue of exortment, I take him to be a foule great arte, &
 & his inftion of fuch death and rarrall, as to make the diction
 of him, his fangeble is his merrour, & who would trace him, his
 vmbage, nothing more.

Com. Your Lord fpeakes moft infallibly of him.

Ham. The conceit may fir, why doe we weep the gentleman in
 our more rarer breath?

Com. Sir,

Ham. It is not poffible to vnderftand in another tongue, you will
 tooo fir firrally.

Ham. What imports the nomination of this gentleman.

Com. Of *Laertes*.

Ham. His part is empty already, all's golden words are fpende.

Com. Of him fir.

Ham. I know you did fir, yet in faith if you did, it would not
 much approue me fir.

Com. You are not ignorant of what excellencie *Laertes*
 fir.

Ham. I dare not confefte that, I call I fhould compare with
 him in excellencie, but to know a man well, were to knowe himfelte,
Com. I meane fir for this weapon, but in the impertinencie had on
 him, by them in his need, hee's a wellflowed.

Ham. What is his weapon?

Com. Raper and Dagger.

Ham. That's two of one kind.

Com. The King fir had a gage with him, five Barbary horfes,

regarding the we, hee's impertinencie, as that fir French Rapers
 and Loyard, with the rafignes, gages, hanger and fo. To the
 of the carriage, with many very repoullie to
 the hites, I had a carriage, and of very liberrall conceit.

Ham. What call you the carriage?

Com. I know you muft be edified by the marger ere you had

The Tragedie of Hamlet

Now the King drinks to Hamlet, come beginne. *Trumpets*

And you the Iudges beare a wary eye.

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Off. Nothing neither way.

Lear. Haue at you now.

King. Part them, they are incens'd.

Ham. Nay come againe.

Off. Looke to the Queene there howe.

Hera. They bleed on both fides, how is it my Lord?

Off. How is't *Laertes*?

Lear. Why as a woodcock to mine owne fpringe *Offick*

The Tragedie of Hamlet

Prince of Denmark.

Make Offa like a wart, may and thou't mouthe,
 L'erant as well as thou.

Quee. This is meeere madnesse,
 And this a while the will vnto him,
 Anon as patient as the fallow Doue
 When that her golden eyles are difposed
 His filence will fit dooping.

Ham. Hear you?

What is the reason that you vfe me thus?
 I lou'd you euer, but it is no matter,
 Let *Heraclius* himfelfe doe what he may
 The Cat will mew, and Dogge will haue his day. *Exit Hamlet*

King. I pray thee good *Horatio* waite vpon him. *and Horatio.*

Strengthen your patience in our laft night's fpeech,
 Wee'l put the matter to the prefent pufh:
 Good *Gertrud* let fome watch ouer your fonne,
 This graue fhall haue a liuing monument,
 An hour of quiet thirtie fhall we fee
 Tell them in patience our proceeding be. *Exeunt.*

Enter Hamlet and Horatio.

Ham. So much for this fir, now fhall you fee the other,
 You doe remember all the circumftance,

Hera. Remember it my Lord.

Ham. Sir in my hart there was a kind of fighting
 That would not let me fleepe, my thought I lay
 Worfe then the munnies in the bilbo, rafhly,
 And pray'd be rafhnes for it: let vs knowe,
 Our indifcretion fometime ferues vs well
 When our deepe plots doe pall, & that fhould learne vs
 Ther's a diuinity that fhapes our ends,
 Rough heu them how we will.

Hera. That is moft certaine.

Ham. Vp from my Cabin,
 My fea-gowne fcarft about me in the darke
 Grop't I to find out them, had my defire,
 Fingard their packet, and in fine with-drew
 To mine owne roome againe, making fo bold

FIGURE 5. Forme N(out)er as printed in exemplar HN.

one of the headlines borrowed from compositor Y and hence about 0.78mm too wide for compositor X's page of type.

Whether the chases of early Jacobean printers had fixed crossbars, as later ones did, is not known; R. B. McKerrow guessed they had at least one.¹⁰ Crossbars would confine the effects of imperfectly locked up type to within the space they enclosed (half a forme for one crossbar, one quarto page for two crossbars), whereas if moveable furniture did the work of crossbars then an oversize headline topping one page might affect other pages held in place by the same furniture. As well as N₃^r (which shows press corrections), the other page on this forme imposed with a borrowed headline is N₄^v—topped by headline j from L₄^v—and it shows no press corrections in the extant exemplars. The same problem of a mismatch between headline and type-page would have occurred when compositor Y borrowed compositor X's headlines: on M₁^r headline b from I₁^r was used, and on M₄^v headline g from I₂^v was used. In these cases, the headline would have been too narrow and any problem of looseness would be confined to the headline. There are no extant variants on these pages. The last two swaps were compositor X's imposition of N₄^r (a page showing one variant) using headline o from L₂^r and compositor Y's imposition of M₄^r (no extant variants) using headline h from N₁^r.

The commonest type of accident in these circumstances is that loose sorts stick to the leather balls used to smear the ink onto the type and are thus lifted out of the press. The obvious remedy would be simply to reinsert the sorts back into the forme, unlocking the forme if necessary and tightening it more than usual to prevent recurrence of the problem. However it may be significant that compared to press correction elsewhere in the book, the changes on N(outer) are more extensive, more difficult to make, and largely lacking in obvious motivation. The preceding press corrections witnessed in the extant exemplars involved just one or two lines in the forme, the lines are always short (in the sense that there are spaces between the last word on the line and the end of the line), and the changes corrected literal errors of some importance. Typical examples are "Showe me the step and thorny way to heauen" becoming "Showe me the steepe and thorny way to heauen" (C₃^v) and "Your Officres" becoming "Your Officers" (L₁^r). Because of the spaces at the ends of the lines, the changes on the preceding formes were easily accommodated by increasing or decreasing that end-of-line spacing as needed and the disturbance of other words was minimal or avoided altogether. By contrast, seven of the ten corrections on forme N(outer) occurred in full lines, several required extensive alteration to the rest of the line, and one required alteration in four lines.

For the sake of argument, let us consider these changes using Wilson's inferred order of correction of F, HN, Y², Wro > L > C², VER. On N₁^r the alteration *thirtie* > *thereby* required that one or more spaces be removed from the end of the line and the three words after *thereby* (which is longer than the word it replaced) were shifted to the right. (In these descriptions, left and right refer in every case to the line as it looks to a reader of the completed book.) On the

10. Ronald B. McKerrow, *An Introduction to Bibliography for Literary Students* (Oxford: Clarendon Press, 1927), 152.

same page, *ball* > *fall* was executed by inserting a thin space after the comma that follows this word, to take up the gap created because *f* is narrower than *p*. On N₂^v *sellingly* > *fellingly* was executed with no discernible disturbance of type, but *dosie* > *dazzie* required the reduction of the first, second, and fifth spaces in the line, and all the type between the first space and *zz* was shifted to the left. On the same page, the change of *y* to *r* and a space to a comma that turned *yau neither in* > *raw neither, in* left the line of type a little loose so a thin space was added after *of* later in the same line, and in executing *too't* > *doe't* everything to the right of the *d* was shifted to the right after a space was removed from the end of the line. Still on N₂^v, the change *reponsiue* > *responsiue* required the removal of a space before the preceding word, *very*, which was shifted left to accommodate the extra *s*. On N₃^r, the change of *sir* > *so sir* required reduction of the spaces between the speech prefix and the first word of the line, between *his* and *dugge* and between the comma and *thus* later in the line so that the two words before *so* were shifted to the left and the type from *so* up to and including the comma was shifted right.

The most extensive alterations were needed for *be hangers* > *be might hangers* near the top of N₃^r, four lines below the too-wide headline *i* that compositor X borrowed from compositor Y. Earlier in this line the space between *sides* and its following comma was removed, and the following four words (*I would it be*) were shifted left to fill the gap created. But this made nothing like enough room for the word *might* to be inserted, so the last word on the line, *then*, and its following comma were moved to the second line, which line had then to lose the last six letters of its last word, *assignes*, plus its following comma, which were moved to the third line (the initial *s* of *signes* being changed to a long *s* because now heading a line), which had then to lose its last letters of *bet a-*, which were moved to the fourth line (the word-breaking hyphen being removed as no longer needed), where the adjustments could stop because the line was not full and spaces could be taken from its end. It is significant that in this adjustment of four lines, three runs of words seem to have been moved as unbroken units, for there is no sign of adjustment within them: “but on, six Barbry horses against six French swords their as”, “and three liberall conceited carriages, that’s the French”, and “gainst the Danish, why is this all you call it?”. As far as one can tell, the smaller units of type that had to be moved around these longer runs also underwent no internal readjustment, only repositioning as units. The resetting seems, then, to have involved the orderly removal or shifting along of small and large groups of sorts and their replacement in new positions. Thus if there was an accident of the press here, it did not involve the extensive piecing of type that may occur when furniture fails under pressure.

Wilson’s inferred order of correction of on N(outer)—F, HN, Y², Wro > L > C², VER—is one of only two possible orders, the other being its exact reverse: C², VER > L > F, HN, Y², Wro. No other orders are possible since the British Library exemplar (L) must represent the intermediate state. Were L to represent the earliest or the latest state then no matter which order we put the others in there would be a number of readings that were changed in the first round of correction only to be precisely undone in the second round. (The reader may see this by rearranging the rows in figure 1 above.) Such self-defeating inter-

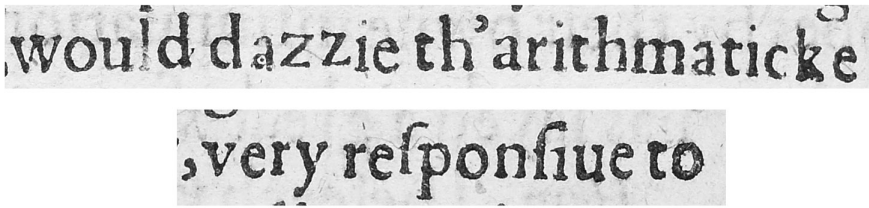


FIGURE 6. The corrected-state readings *dazzie* and *responfiue* (from exemplar VER).

vention is most unlikely. In determining the order of correction, evidence from the meanings of the words is inconclusive. For all ten variants a case could be made for either of the two readings, since even the most unlikely word, *reponsiue*, could be defended as Hamlet's mocking coinage (from the French *réponse* meaning 'answer') prompted by Osric's ornamented description of the "French bet against the Danish" (N₃^v). Laertes wagers French rapiers and poniards that he brought back from Paris, from where his skill in fencing was, according to Claudius, reported to the Danish court by a visiting Norman gentleman called Lamord, much to Hamlet's envy (L₄^r-L₄^v). Read in context, the other nine variants are either more-or-less poetically equivalent, such as *pall/fall* and *too't/doo't*, or only slightly weighted on one side, as with *thereby* being a trifle less awkward than the nonetheless acceptable (given appropriate punctuation) alternative of *thirtie*.

Wilson's order of correction can, however, be confirmed by a couple of typographic anomalies. Figure 6 shows the N₂^v variants *dazzie* and *responsiue* from the Bodleian (VER) exemplar, showing that *zz* in the former and the first *s* in the latter are displaced vertically from the other letters in their respective words; the Cambridge exemplar (C²) shows the same anomalies. These displaced letters were put into the forme during correction if Wilson is right, or were removed from it if the reverse order is correct. It is not unusual for letters inserted during correction to be somewhat misaligned with their neighbours, especially if correction is done on the bed of the press, as would be necessary if there were a problem of loose type. (On the imposing stone a comprehensive set of alterations could be made at leisure, resulting in more evenly aligned type, but carrying the forme from the press to the stone would risk disaster if type had loosened during machining.) If, however, Wilson is wrong and the Bodleian exemplar represents the earliest state of the forme, then in each of two rounds of correction (once for *responsiue* > *reponsiue* and once for *dazzie* > *dosie*) the letters chosen for adjustment happened to be those set somewhat higher than their neighbours. These displaced letters do not call attention to themselves by disfiguring the page, and it is unlikely that they received special attention purely by chance.

CONCLUSION

The coincidence of unusual clustering of stop-press corrections on one forme with a break in the pattern of headline reuse on that forme suggests a mechanical

explanation for the extensive adjustment of N(outer). That the changes on this forme were relatively undermotivated and difficult to make (compared to those elsewhere in the book) gives further reason to suppose a mechanical explanation rather than to assume that the printers were unusually fussy at this point. The largest single alteration, involving resetting four lines of type on N₃^r, occurred where an oversized headline (likely to make the type underneath it loose) was borrowed, quite possibly for the first time in the job, from the other compositor. However, the alteration was extensive only because a whole word had to be inserted into a block of prose (*be hangers* > *be might hangers*), necessitating the movement of type in four successive lines. This change was undermotivated since *might* was not essential to the line's meaning: the optative mood is already established by the phrasing *I would it be hangers*. The adjustment was in any case bungled, since *be hangers* > *might be hangers* was clearly intended. This bungling might encourage scepticism about the accepted order of correction (Wilson's order), making us wonder whether in fact the obviously incorrect reading *be might hangers* was the initial setting and during the run it was corrected to *be hangers*. The displaced letters in *dazzie* and *responsiue*, however, establish unequivocally the order of correction for the entire forme: Wilson was right. Figure 4 represents the forme of type as the compositor would see it, showing how easy it would be to insert a word in the wrong place because the type is a mirror image of the inked impression it makes.

If, as I propose, the difference in widths in the two compositors' headlines caused this forme's peculiarities, the effects were not uniform: N₃^r and N₄^v were set beneath overlong headlines but only the former underwent stop-press correction, and N₂^v was set with a correctly-sized headline yet it also underwent correction. However, it would take only one significant accident in one part of the forme for the entire forme to receive attention, and if a large number of (not necessarily adjacent) sorts were progressively loosened during machining until they were plucked from the forme while it was being inked, then the compositor would probably be asked to check copy before reinserting them, since the potential for mistakes is great when multiple sorts are to be reinserted at once. As an explanation, such an accident would economically combine the known facts regarding the first round of stop-press correction: the compositors set to different measures, they swapped headlines when this forme was set, the forme contains an unusually large number of the book's variants—38% of the variants falling within just 4% of the book—and the alterations were relatively undermotivated (when judged purely on poetical grounds) yet difficult to carry out. Such an accident would preclude removing the forme to the imposing stone, and repair on the bed of the press (presumably under pressure of time) is consistent with the misalignment of the letters *zz* in *dazzie* in the first round of corrections. (The misalignment of the first *s* in *responsiue* was part of a subsequent round of stop-press correction—*reponsiue* > *responsiue* and *sellingly* > *fellingly*—that required so little disturbance of type that it could easily be achieved without removing the forme from the press.) If there was such an accident then the readings of the corrected state resulting from the first round of changes, witnessed uniquely in the British Library exemplar, have authority arising from the compositor's likely consultation of copy when recovering from it.

APPENDIX I

TYPE-PAGE WIDTH (IN MILLIMETRES) OF THIRTY-SIX PAGES
IN THE SEVEN SURVIVING EXEMPLARS OF Q₂ HAMLET

Set by X	Set by Y	C ²	C ²	VER	VER	L	L	HN	HN	HN	F	F	Y ²	Y ²	Wro	Wro
	E ₄ ^r		98.5		98.5	98.5	98.5	99	99	98	98	98	98.5	98.5	98	98
F ₁ ^r		98		98		97.5		98		98		98	98		97.5	
F ₁ ^v		99		99		98.5		98.5		98		98	98		98	
F ₂ ^r		98		98		97.5		98		98		98	97.5		97	
F ₂ ^v		98		98		98.5		99		98.5		98.5	98		98	
F ₃ ^r		98		98		98		98.5		98.5		98.5	98		98	
F ₃ ^v		98.5		98.5		98.5		99		98.5		98.5	98		98.5	
F ₄ ^r		98		98		98		98		98		98	98		98	
F ₄ ^v		98.5		98.5		99		99		98.5		98.5	98		98.5	
	G ₃ ^r	99					98.5	99				99	99			98
	G ₃ ^v	99				98.5		99				98.5	98.5			98
	G ₄ ^r	98.5				98.5		99				98	98.5			98
	H ₁ ^r	98.5				98.5		99.5				99	99			98
	H ₁ ^v	99				99		99.5				99	99			98.5
	H ₂ ^v	98.5				98.5		99.5				98.5	99			98.5
	H ₃ ^r	98.5				99		99.5				99	99			98.5
	H ₃ ^v	98.5				98.5		99.5				99	99			98.5
	H ₄ ^r	98.5				98.5		99				98.5	99			98
	K ₁ ^v	99				99		99.5				98	99			98.5
	K ₂ ^r	99				99		99.5				98.5	99			98.5
	K ₂ ^v	99				99		99.5				98.5	99			99

APPENDIX 2

STATISTICAL ANALYSIS

Regarding the printer's measure used by composers X and Y, we can say with some confidence that they were different and by how much. For each exemplar, we can think of the twelve readings for composer X as a sample from a wider body of measurements that we could not take (because he set prose on only twelve pages) and this wider body of measurements would have a mean value that we do not know. We may treat composer Y likewise, although we have a larger sample, twenty-four readings, from the wider body of measurements with an unknown mean. We are interested in the difference between the two unknown means, and can use the statistic called 'the difference in the sample means' to comment upon it. In Appendix One, the numerical means of the sample for each exemplar are given: this is simply the sum of the readings divided by the number of readings, twelve for composer X and twenty-four for composer Y. An expression of how widely or narrowly the readings are spread around the mean is called the 'standard deviation' (here SD). This is calculated by squaring each reading's difference from the mean, summing these squares and then dividing that sum by the number of readings, and finally taking the square root of this quotient.

Once we have the standard deviations for the sample readings, these can be used to calculate a pair of numbers, a lower limit and an upper limit, for which we can say to an arbitrary level of confidence that the mean of the unknown distribution readings (that is, the actual width of composer X or composer Y's composing stick) falls within those limits. The lower the confidence level, the narrower the span between the lower and upper limits, and a typically useful value for the confidence level is 95%. The formulas giving the lower and upper limits for a confidence level of 95% are:

$$\text{Lower limit} = Y_{\text{mean}} - X_{\text{mean}} - (1.96 \times \sqrt{(\text{Comp X's } SD^2/n + \text{Comp Y's } SD^2/n)})$$

$$\text{Upper limit} = Y_{\text{mean}} - X_{\text{mean}} + (1.96 \times \sqrt{(\text{Comp X's } SD^2/n + \text{Comp Y's } SD^2/n)})$$

where X_{mean} is the average of the composer X readings, Y_{mean} is the average of the composer Y readings and n is the number of readings in each man's sample.¹¹ This calculation is done for each exemplar separately. This statistic is included in Appendix One to demonstrate that to a reasonable level of confidence the differences in the readings are statistically significant rather than 'noise'. From it we can confidently say that composer Y set his pages somewhere between half a millimetre and one millimetre wider than composer X, with the likeliest difference being around three-quarters of the millimetre.

11. These equations assume what is called a normal distribution, meaning that the readings fit a characteristic profile for differences from the unknown mean. Because of the small sample sizes available here (twelve and twenty-four readings) there is an argument for instead assuming what is called Student's t-distribution. However, in this case such an assumption makes negligible difference to the overall result.

Although each exemplar has a different storage and handling history that might affect its absolute readings (which cannot therefore be combined across exemplars), these histories ought not to affect one compositor's pages more than the other's within each exemplar. The raw data vary around the means because each sheet of hand-made paper would have absorbed a different amount of water when wetted for printing, would have shrunk by a different amount when dried (and during storage over the ensuing centuries in different locations), and because the depth of ink applied before each pull would vary, as would the pressure exerted by each pull and hence the depth that the type bit into the paper. Also, there is human error in measuring by eye. The readings were taken by placing a measuring rule on the page to press it flat and recording the full distance from the first sign of ink in the first letter of the line to the last sign of ink in the last letter on the line, ignoring where necessary letters with kerns extending beyond the body of the type. Where different lines on a page produced different readings, the readings for the page were averaged. The Huntington exemplar's values for both compositors are consistently higher (by about half a millimetre) than the others, which might reflect a permanent expansion upon washing (and subsequent pressing); it is the only exemplar whose leaves have been inlaid, which operation is not infrequently accompanied by washing.