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“Digital First Folios”

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Since the earliest online facsimiles appeared in the late 1990s, digitization has radically altered the landscape of First Folios. There are, at this moment of writing, twelve digitized facsimiles of the First Folio freely available online from the following institutions: Bodleian Library, Brandeis University, Folger Shakespeare Library (three copies), University of Leeds, Miami University of Ohio, Meisei University, New South Wales State Library, University of Pennsylvania, Bibliothèque d’agglomération de Saint-Omer, and Württembergische Landesbibliothek, Stuttgart.¹ A thirteenth Folio can be found behind a paywall at Early English Books Online of another Folger copy. And by the end of 2016, we can expect more to be available.² It should hardly be surprising that there are multiple copies of this fetishized object online. We are told, repeatedly, that this is one of the most important books printed. And there are very few places in the world where the public can see a copy of the book (indeed, many places that do own copies of the book restrict their access to only a few researchers). Online facsimiles make access to and study of the First Folio possible for an exponentially greater number of people than earlier technologies. It is now possible for teachers to easily task students with looking at the earliest printed texts of the plays, for theatre practitioners to consult the plays without the intervention of modern editors, and for everyone from the general public to advanced scholars to examine the First Folio text for their own purposes.

But what does this landscape make possible for Shakespeare scholars? What sort of uses are enabled by the images and platforms that make digital First Folios available? What information about the book and the digital media is shared or withheld and how does that affect what users might do? By looking at the currently available digital F1s, as a group with shared characteristics and as individual copies, we can draw some conclusions about what we have to work with now as scholars but also about what we need for the next step of digital Shakespeare studies.

Throughout this essay I refer to “users” of the First Folio rather than “readers” in part because people approach both codices and digital objects with a broad range of activities: they read but they also browse, search, look at, skim, collect, or fondle. Some of what users do with digital facsimiles might be different than what they do with books: they might download, save, tweet, extract metadata, markup with computer languages, rearrange the images, or repurpose in new settings. Capturing this range of possible activities is best done by referring to users than to readers. It is also important to note at the outset that many of the decisions about how individual digital copies of the First Folio are displayed are made because of constraints of the digital collection they are part of.

With the exception of the Bodleian's First Folio and the two copies hosted at the Internet Shakespeare Editions (from Brandeis and New South Wales), all the other F1s are part of larger digital collections, and they share the attributes of the platforms that house them. Recognizing that choices about display and use are not particular to First Folios, however, does not mean that that are not relevant to thinking about how these digitized books are used. Indeed, the elements that we might wish to find in digital F1s are often elements that we wish to find in any digitized facsimile of a rare book.

One of the first differences between working with a First Folio and a digitized First Folio is trying to find your way through it. The First Folio, like many early printed books, comes with a pretty good navigation system built into it. There is a title page, a table of contents, and a sequence of texts that—with *Troilus and Cressida* the one key exception—follows the order established in the table of contents. Each play has a clearly demarcated beginning and end, sometimes with clear divisions within the play, and running titles at the top of each play announce which play the book is open to. If you want to read *Macbeth*, you can see from the Catalogue that it falls roughly half-way through the Tragedies section, on page 131. You could eyeball where the last sixth of the book begins, turn the leaves over to that section, and then use the page numbers as a guide to get to the start of the play.³

With a digital facsimile, finding your way through the First Folio is trickier. The first question a user faces is where the facsimile begins: is it the cover? the endleaves? the blank recto of "To the Reader"? the title page? the opening of *The Tempest*? Each of these is a choice that at least one of the thirteen currently available F1s makes, sometimes because the copy digitized is missing boards or leaves, but more often because a choice was made in imaging the book to begin in a specific location. The next question is how do you move through the book to get to where you want to go? If you are looking for a specific play, many of the digital F1s allow you to jump to its start. Through a sidebar or drop-down menu, you can find *Othello*, click on it, and the platform will show you the image of the play's beginning. Not all digital F1s allow for this, however: the digital image platform used by the Folger does not provide for any sort of navigation other than scrolling through thumbnails, nor does the one displaying the Saint-Omer's copy. But what if you are interested in Desdemona's protestation of innocence to Iago, a speech that appears only in the First Folio, in the middle of Act 4, scene 2? Over the centuries we have been reading Shakespeare's plays, a system of reference to act, scene, and lines has developed; since R.B. McKerrow advocated the practice in 1939 and Charlton Hinman's facsimile for Norton put it in place in 1968, a system of Through Line Numbers, counting line numbers as printed in F1 from the start of a play through its end, has standardized references to F1 texts.⁴ Desdemona's speech, as counted in TLNs, is 2864–2878, and as counted in the 3rd edition of the Norton Shakespeare is 4.2.150–163 (those line numbers will, of course, vary from edition to edition).⁵

But many online F1s do not operate with either of these systems of navigation. Depending on which of the Bodleian's interfaces you use, you can navigate to the beginning of the play or of the scene,

and then scroll through pages until you get to Desdemona's passage. The navigation systems used for Leeds and for Miami divide the First Folio into plays, and then each play into pages; *Othello*, in those systems, runs from page 1 to page 30. Knowing that Desdemona's speech comes in the fourth act, you might guess at page 20 as your starting place and then navigate forward to her lines. (Leeds does not allow you to navigate by act, scene, and line numbers, but it does display what those are in its sidebar, thus making the process a bit simpler, although it is not clear to what those correspond. In plays that do not, in F1, include act and scene divisions, Leeds provides them nonetheless.) If you happen to know the F1 page number of Desdemona's speech (it is page 332), you can jump to that page in the interface for Penn's copy. With the exception of Meisei, none of the digital F1s allow you to navigate by line numbers, which makes sense since the F1 text does not correspond to modern editions' line numbers. But it seems surprising that only Meisei and the Internet Shakespeare Editions platform let you navigate by through-numbering.⁶

Readers interested in Shakespeare's text refer primarily to acts, scenes, and line numbers. But textual scholars navigate by gatherings and signature marks (Desdemona's speech is on sig. vv2^v). This proves even more difficult to do in digital facsimiles. Only the Meisei lets you jump immediately to that page; second-best is the Bodleian, which lets you jump to the beginning of a gathering. The Folger's three copies include the signatures in captions below each thumbnail; Leeds displays the information in its sidebar; and ISE includes it in the separate 'page info' window. (It is worth noting, however, that there are wide discrepancies between how many of the digital F1 platforms note the signatures of the preliminaries and how the now-standard Blayney collation notes the signatures; see later in this article for more on the issue of the order of the preliminaries.)

Of course, now that you have found what you were looking for – or what you stumbled across when browsing, an activity that most of the digital F1s accommodate more smoothly than searching – you might want to do something with it, such as download it for your own use, or bookmark it for later studying or sharing. The ability to disassemble the First Folio and send parts of it to others is something that, while once common in order to 'perfect' copies of the book, is now frowned upon. In this regard, digitized First Folios offer benefits that the printed books can no longer. Twelve of the thirteen digital F1s allow users to download images (usually of pages, but sometimes of openings); eleven allow for the reuse of the images, typically for non-commercial use but sometimes for any use at all, as long as the images are attributed to the institution. (Leeds both claims all copyright over its images and disables the ability to download images; Early English Books Online allows users to download images, but users are to ask permission before any reuse. On the other end of the spectrum, Miami has placed its images in the public domain, making them free to anyone to do anything with.)

The question of whether an institution can claim copyright over digital images of an out-of-copyright work is a complicated question.⁷ But even in jurisdictions where an institution has the legal ability to copyright facsimile images of a First Folio, the right to copyright is not a mandate to do so. And even with copyrighted images, there are a wide range of choices a library could make about

how they wanted to make them available, including placing them in the public domain, using a license that requires only attribution, or allowing for free non-commercial use.⁸ So what do the choices that libraries suggest about the place and value of digital First Folios?

It is hard to draw many clear conclusions about what we might learn from the copyright and licensing options the thirteen digital First Folios are made available under, a spectrum that covers that full range from anything goes to nothing goes. One conclusion is that there is some benefit of these digitizations that is expected to accrue to the institutions that created them: with the exception of Miami's public domain images, all the others require users to attribute the images to the creating institutions. One way to understand attribution is to see it as a way of providing identification. Should someone need to know which copy of a First Folio they are looking at, an institutional identification can help trace that copy. The case for identification is slightly less clear for institutions that have digitized more than one copy, such as the Folger, which has plans to have over twenty copies online by the end of 2016. (While embedded image metadata could be used to provide information about copies, institutions have not taken advantage of that technology.) It is also worth noting, on the subject of institutional reputation, that at the moment, digital First Folios are primarily found on the digital repositories of individual libraries, rather than on aggregators like the Internet Archive or the Digital Public Library of America.

We might also see in the licensing terms a consensus that digital F1s should serve an educational purpose: all except for the Leeds and EEBO copies allow for free reuse of the images for non-commercial educational purposes. (Some institutions allow for more extensive reuse as well.) Although the terms of such reuse are not always clear – is publication on a class blog covered under educational use? inclusion in a conference presentation? remaking the jpegs as pdfs for distribution for students to read as an ebook? – the intent is understandable enough. But the intent runs counter to how the First Folios are presented, which is nearly entirely without any educational context, for any level of user.

Of the thirteen digital First Folios, only Leeds – the most restrictive in terms of permitted reuse – provides accompanying explanations as to what the First Folio is, its significance, the physical condition and provenance of their copy, and the digitization process. The Internet Shakespeare Editions and Penn provide the ability to compare F1 texts with other texts of the plays, including post-Renaissance editions, and Meisei provides a wealth of information about the marginalia in its copy, but they fall short in other areas. The Bodleian provides only a link to a promotional site for its digitization campaign; Miami has only a paragraph on all four folios; and the Folger, Saint-Omer, and Stuttgart do not provide any information with their digital F1s at all.⁹

So while these libraries might assume that there is a positive educational value for making digital First Folios available, they seem to also be assuming an expert audience that already knows how to use them, including understanding why the First Folio is important, what specific pages are interesting to draw attention to, and what exercises might benefit students. While that audience is

certainly out there, it is vastly outnumbered by potential users who might be familiar with the First Folio but not expert enough to navigate it, or who might be interested in Shakespeare but not knowledgeable about the plays' textual history, or who might only be curious in what all the fuss is about. All of these groups are important parts of the audiences that libraries historically serve, and so might be imagined to be part of the online audience for a digital First Folio.

What is standing in the way of libraries providing this sort of context for their digital First Folios? One answer is their platform: nearly all of the digital F1s are hosted on the same platform used for the rest of these libraries' digital collections. Some of those platforms can accommodate textual context, such as Leeds's; others, such as the Folger's, do not. But even purpose-built platforms, like that used by the Bodleian, do not seek to assist users in approaching the First Folio beyond a text to browse or a group of pretty images to peruse. Technical limitations, we must assume, are only part of the problem. Perhaps another obstacle is the drain on personnel: a library needs staff that has expertise in the First Folio, the ability to translate that expertise into language accessible to a general audience, and the time to do so. One might imagine that finding experts on Shakespeare would not be hard at a university, although finding experts on the First Folio is a bit harder (hence the need for this volume); finding experts who can write prose that is clear and compelling to the public is certainly harder, as becomes clear from browsing numerous academic websites. But, as with the technical limitations, these are not insurmountable obstacles by any means. Perhaps the hindrance is not in the limits of technology or personnel, but in how we conceive of the value of putting the First Folio online. Perhaps digital First Folios have not been provided with context primarily because they have not been understood to need any context: the act of displaying the First Folio, to its caretakers, has too often been seen as an act sufficient unto itself.

If one difficulty for audiences in using these digital First Folios is a lack of context for what a First Folio is, another is a lack of information about what these digital objects are. For a book on which thousands of hours have been dedicated to examining the smallest physical characteristics, it is either entirely surprising or completely obvious that almost no time has been spent on the characteristics of its digital incarnations – entirely surprisingly because one would imagine equally lavish attention on a similar object but completely obvious that it is missing because most humanists still have not learned to think of digital objects as distinct from what they represent. Only the Leeds and New South Wales copies provide any information about the equipment and process used to create their images.¹⁰ The other eleven do not include any information on their sites about the creation of their digital First Folios: not when the images were made, nor what equipment was used, nor what resolution the images are shown at; not when the platforms were built, nor who created them, nor how they were funded.¹¹ If the First Folio was treated the same way its digital incarnations are, we would believe that it sprung forth fully formed from Shakespeare's imagination without the intervention of paper, ink, stationers, or collectors. But nothing springs forth fully formed, not even digital facsimiles, which have material and ideological characteristics that afford some usages and prevent others.

Without this information, users of these digital images cannot easily identify how they might differ from the codices in ways both large and small. For instance, we might notice that there is usually no indication of what size the represented page is, either from looking at an image of it or from reading an associated record. (The Bodleian's images, when downloaded from the text/image page, include a ruler; the final image from Stuttgart's Folio also includes a ruler.) We also cannot accurately tell what color the pages are; color representation on screens is inconsistent, which is why color targets (those strips of different color tones) are often included with images to enable accurate rendering. The New South Wales Folio has a decidedly pink cast to it, while Penn's is yellowish, and Folger's copy 5 has cool undertones. But since only Stuttgart includes a color target, at the very end of its sequence of images, it is hard to know how much of the color variation is due to the paper and how much to the imaging.

The images can be misleading in other ways as well. Do we view the First Folio as a series of individual pages or as a series of openings, with pages on the left-hand side adjacent to those on the right-hand side? Viewing the digital F1s online, five Folios are presented as individual pages, five as openings (all four Folger copies plus Saint-Omer), and three allow a user to choose either a page or an opening view. But when it comes to downloading images, the three that give users a choice no longer do so; all instead offer downloads only as individual pages. A closer look at the Bodleian, Miami, and Stuttgart copies reveals why: each was photographed as individual pages, and the separate pages were digitally stitched together for the facing-page view. The digital view of the opening is, in fact, two digital objects joined together. The context provided for the Leeds copy helps to explain the preference for shooting single pages: most bindings do not safely open at angles greater than 90° (and not always that far), and photographs are best taken when the camera is parallel to the object being imaged. The solution for most rare books is to shoot the right- and left-hand pages of an opening separately. For the Leeds copy, they chose to shoot the recto of each leaf all the way through the book, and then the verso of each leaf all the way through the book, ordering the images correctly when they were finished. Another solution might be to have two adjacent cameras set up so that each faced the recto and verso leaves at the correct angles. Either way, the images could then be digitally altered to create the suggestion of a flat, fully opened book that is easy for the user to view. Is this how the five Folios that download as openings were treated? There is no indication, in contextual notes or in the image metadata to tell us that these are anything other than single shots of open books. Only someone who has handled a number of folios might wonder if these are accurate representations of the heft and tightness of such volumes.

The question of whether it matters if the images are of physical openings or of digitally stitched together pages is a question of whether we want digital First Folios to represent the text or the book. In many instances, digital First Folios have chosen to prioritize representing words over material object. The clearest example of this is the decision by New South Wales not to image any pages that do not have text on them, including the recto of 'To the Reader', the verso of the title page, or the blank versos of any of the preliminary leaves. What sort of experience do users of this digital F1 have if they start with the cover, and then jump to 'To the Reader', which appears (correctly) to face

the title page, and then immediately jump to the right-hand page of the next opening. Do they not notice skipping over pages? Do they notice and not care? Do they wonder what is missing?

Treating digital First Folios as replicas of text rather than as objects in their own right also makes it difficult for us to understand them through the bibliographic and cultural material lenses that studies of the First Folio have been so important for in illuminating the histories of early modern printing and book collecting. We might, for instance, wonder how the digitization of these thirteen First Folios were funded: through federal or private grants, through institutional funds, through private donations? Were they tied to exhibitions, anniversaries, large projects, or used as test-case scenarios? The Bodleian's creation of their digital First Folio is the most publicly documented of the group in its 'Sprint for Shakespeare', the 2012 campaign to publicly fund the conservation, digitization, and online publication of its First Folio.¹² Because of the public funding of its project, the Bodleian felt strongly that the results of the projects – images and xml – should be licensed openly for reuse. Their public campaign, in turn, was inspired by the public campaign to raise funds to purchase the book in 1905, when the family who owned the copy offered the Bodleian the opportunity to raise enough funds to make a competitive offer against the anonymous American who wished to buy it. In both campaigns, Shakespeare is held up as a singular object of British communal heritage.

The strategy to digitize the Bodleian's First Folio is in contrast to the development of Penn's digital First Folio, which was digitized as part of a larger project in 1998-2002 funded by the National Endowment for the Humanities. English Renaissance in Context (ERIC) was a collection of digitized texts from the English Renaissance and a group of tutorials designed to help users learn about Shakespeare's plays and the printing and selling of hand-press books.¹³ A federally funded project intended to harness developing technology and its potential to reach students, Penn's project situates the First Folio in the middle of cultural and literary contexts. Like the Bodleian's, it is specifically designed to be consumed online by students and educators, but it grows out the scholarly impulses of cultural and textual materialism that were a central part of Penn's professorial interests in the 1990s.

The four copies of the Folger's First Folios, however, have found their ways online more haphazardly, a reminder that commercial and institutional interests sometimes lead to offshoots rather than deliberate strategies. The oldest of these is also the only one still behind a paywall: copy 7, microfilmed in 1957 for UMI and then digitized in 1998 when the UMI microfilms were incorporated into Early English Books Online, a commercial product from ProQuest LLC. The most widely viewed of the Folger's facsimiles is probably copy 5, first imaged in 1999 by Octavo, a company formed by the CEO of Adobe with the intent of publishing high quality facsimile editions with searchable texts of rare books. In this instance, Octavo intended to publish a CD-ROM of the First Folio accompanied by essays about the book and its provenance. The book was filmed at the Library of Congress by Octavo staff, along with other books in their project, and the Folger received copies of the CD-ROMs as well as a copy of the source files. The book was reimaged by Octavo in 2004 since the 1999 images were done with a raking light that left heavy shadows; those images are

now also viewable on Octavo's website *Rare Book Room*, along with other "great books of the world," including works of Benjamin Franklin, Galileo's *Sidereus nuncius*, and Louis Renard's *Poissons, Ecrevisses et Crabes, de Diverses Couleu*.¹⁴ This copy of the First Folio can also be seen on the Folger's digital image collection, as well as on a display kiosk in the Folger's Great Hall. The third of the F1s, copy 68, was digitized by the Folger's Photography and Digital Imaging department in 2007 before it was loaned out for exhibit as part of Jamestown's celebration of the 400th anniversary of its founding. This copy is viewable through the Folger's digital image collection as well as through the World Digital Library, a Library of Congress project supported by the United Nations Educational, Cultural and Scientific Organization (UNESCO). As part of WDL, the First Folio appears alongside other world treasures, part of a multi-cultural, multi-lingual collection of works that define global cultures.¹⁵ The fourth of the Folger's digitized F1s, copy 9, was selected for digitization by its rare book curator in 2014 and subsequently added to its digital image collection. Items get added to the Folger's digitization queue when they are part of a larger project (typically, but not always a grant-funded project), when they are requested by patrons, when they are requested by staff for publicity needs, and when they are requested by the curators. In this case, there are no records indicating why the curator on staff at the time was interested in that copy, although subsequent correspondence revealed that the volume had originally been intended to go on exhibition at the University of North Carolina, and so was imaged as a security measure. The end result is that the home of the world's largest collection of First Folios is also the home to the largest collection of online First Folios, but there is little sense of deliberate shaping of, or engagement with, those materials.

If there are critiques that one can make of individual digital First Folios, there are also benefits to having an aggregate of thirteen copies to work with. It is possible, thanks to the obsessiveness with which the First Folio has been studied, to use these multiple copies to illustrate some aspects of how early modern books were printed. Because scholars have recorded a large number of stop-press changes in the printing of F1, we can find many of those changes in the copies that have been digitized. Viewers can compare copies with a range of changes from the minor correction of transposed letters 'flelow' (sig. 'gg4^v' in Bodleian, Folger 68, Miami, and Penn) to 'fellow' (other copies) or the upside-down 'i' in 'Lucius' (sig. dd2^r in Bodleian and Folger 5) to the more significant addition of two lines missing from Bulingbroke's speech in the last scene of *Richard II* (sig. d5^r in Miami).¹⁶ All thirteen copies are of the third state of the First Folio – all of them include *Troilus and Cressida* and all include the Prologue to that play – so there is not, unfortunately, much to be gained in the from the standpoint of experiencing the different states of the First Folio. A couple copies have Catalogues that have manuscript emendations noting the presence of *Troilus* (New South Wales and Stuttgart), which creates the opportunity for talking about that aspect of the volume's textual history and owner's feelings of completion or navigation that might lead them to wanting to note its presence.

With the exception of the Meisei copy and the manuscript additions to the Bodleian flyleaf, there is not a lot to say about annotations in these copies. Many copies of the First Folio, of course, were washed by later owners, who wanted pristine copies. Some extant copies with interesting

annotations – the Padua copy with what appear to be promptbook markings comes to mind – have not been digitized. But for the copies that have been digitized cover-to-cover, with bindings and flyleaves and provenance markings intact, it is possible to look through this collection of First Folios and have something to say about the cultural history of collecting Shakespeare.

One of the most interesting features that comes to light in looking at this group of First Folios is one of the aspects of the volume that most users skip over: the nine leaves of preliminaries. As bibliographers have long noted, the order in which the front matter appears is not consistent from volume to volume. Part of this is structural: the title leaf, with the engraved portrait of Shakespeare, was printed separately and is not conjugate (that is, physically joined) with any of the other leaves; even without that extra leaf, it is not immediately clear where the unsigned sheet with Digges's poem 'To the memorie of the deceased Authour Maister' (sig. ^rA5+1) and the list of actors (sig. ^rA5+2) fits into the sequence of leaves. If this first gathering is a gathering of folios in 8s, with four folded sheets nested inside each other, one would expect the first four leaves to be signed, but as it is, only the first three leaves are signed. Where, then, is the fourth sheet to go? In the 1990s, Peter Blayney argued convincingly that this sheet comes between the fifth and sixth leaves of the preliminary gathering, rather than coming between the last leaf of the preliminaries (the Catalogue of plays on sig. ^rA6) and the start of *The Tempest* (sig. A1).¹⁷ The root of Blayney's argument is a bibliographic one: if ^rA5+1:2 were intended to follow ^rA6, the gathering would have been likely to have been signed B, rather than remaining unsigned, and in the best preserved copies, the sheet appears before ^rA6, not after.

But in looking at our collection of thirteen digital First Folios – an opportunity we would almost never have in person – we can see the cultural priorities that drive the organization of the preliminaries even when bibliographic clues were not recognized or followed. Of the twelve copies that include the preliminaries, or facsimiles of them, ten follow arrangements that do not disturb conjugate leaves, even though they do not agree on the order. Five follow Blayney's formula, with ^rA5+1:2 preceding ^rA6. Two of those five have either some or all of those leaves in facsimile, so the decision to arrange the leaves in that order was not determined by their physical structure (whether they were conjoined or not) but by a later owner or binder's sense of their correct order. Another four place ^rA5+1:2 after ^rA6, an order that makes some sense physically (it keeps the two conjoined leaves together) if not necessarily logically (it separates Digges's memorial poem from the other memorial poems). And in the Bodleian's copy, the conjugate ^rA5+1:2 is inserted between ^rA4 and ^rA5. It's in the remaining two copies that we learn something more interesting. In both the Miami and Penn copies, conjugate sheets have been split (in different patterns) to keep the Jonson and Digges memorial poems together (sigs ^rA4 and ^rA5+1) and to keep the list of actors and the list of plays together (sigs ^rA5+2 and ^rA6). Comparing these thirteen copies in aggregate, users can begin to think through the ways in which notions of reading and of Shakespeare's cultural authority shape decisions of how a book is ordered, along with the physical properties of how a book is printed.

It is possible to compare the First Folio preliminaries in aggregate this way because bibliographers have developed a method for describing the physical properties of printed books and have come to agree on a standard reference system for noting the order of the ideal copy of the First Folio. (Even when reading alternate collational formulas, it is not difficult to parse them, because they conform to the same set of principles.) But it is difficult to work with the digital First Folios in a similar way because digital facsimiles have not yet been standardized. There are image metadata standards: EXIF, for instance, is one of the defaults used to record such things as camera settings, time and location the image was taken, compression, make of the camera, and color information; IPTC and XMP are other standard formats for image metadata. What there is not, however, is a standard of whether such metadata needs to be included in the images of facsimiles that are made available to the public. For instance, according to its image capture documentation, the Folger Shakespeare Library includes the following IPTC metadata in its master image files: "Date and time of capture, capture device, call number, location in book or description, event name, event date, digital composite information, copyright notification, FSL website, FSL address and contact info."¹⁸ But at some point between when the image derivatives get made and when they are uploaded to the digital image database, that IPTC metadata gets stripped.

I have discussed the importance of image metadata as a way of helping users understand how the image they are looking at relates to the physical object it represents: what size is it and what color? Here I want to point out the importance of metadata for understanding and using the digital object itself. With a single exception, the digital First Folios available today are intended to be substitutes for reading the physical codices, and the metadata associated with them remains at the level of the volume: the catalog record for the book. The exception is the Bodleian's digital F1, which can be read as if it were the physical volume of plays, and which has a catalog record associated with its whole. But it also can be accessed and downloaded in discrete parts, such as the XML for *The Tempest*, for example, which includes information about both who did the encoding and the bibliographic information for the work encoded. What such metadata enables is the ability of digital First Folios to be manipulated as digital objects, leading to the creation of new digital objects and possibly new tools for research. And with metadata that follows accepted standards, digital objects produced by different institutions can work with each other to create new uses.

Imagine, as a small test case, someone who is interested in the F1 title page, including the different amounts of wear it exhibits, or if inscriptions are added, or whether the original is included or a facsimile is tipped in. Our test user might wish to retrieve images of that single leaf from all digitized copies of the First Folio and gather them together into a new site to display side-by-side, or in overlay, or in any other form she or he wished. It is possible, with thirteen copies, to do that work by hand, but by the end of 2016, the number of digital F1s might have more than doubled. And while it will still be possible to fetch those images by hand, it would be much faster if a script could do that labor. And once a script has been written to fetch the title page, it could easily fetch other leaves from multiple copies, perhaps all of the leaves containing 'To be or not to be', or all of

Hamlet. But a computer script can only do that labor if the individual copies of F1 are built on interoperable systems with metadata that corresponds to specific images.

We are at a moment when digital facsimiles of the First Folio have been created primarily to act as surrogates for the physical books and to be encountered as discrete copies. But we are moving toward a time when digital facsimiles are going to be seen as digital objects in their own right: not as surrogates for a printed book or manuscript, but as different ways to experience that object. For some uses, the material text might be better suited; for others, a digital image might be a better choice. In order for that to happen, digital facsimiles are going to need to enable a range of different uses and they are going to have to provide metadata and interoperability that will allow users to shift from being passive consumers to active agents of their uses.

¹ The thirteen digitized copies, as of October 2015, are at the following URLs: Bodleian (<http://firstfolio.bodleian.ox.ac.uk/>), Brandeis (http://internetshakespeare.uvic.ca/Library/facsimile/book/Bran_F1/), Folger (no. 5 <http://luna.folger.edu/luna/servlet/s/2h5pnh>; no. 7 http://gateway.proquest.com/openurl?ctx_ver=Z39.88-2003&res_id=xri:eebo&rft_id=xri:eebo:citation:99846615; no. 9 <http://luna.folger.edu/luna/servlet/s/5q6w36>; no. 68 <http://luna.folger.edu/luna/servlet/s/p3hv79>), Leeds (http://library.leeds.ac.uk/special-collections/view/578/the_brotherton_first_folio_digital_resource), Meisei (<http://shakes.meisei-u.ac.jp/e-index.html>), Miami (<http://contentdm.lib.miamioh.edu/cdm/landingpage/collection/wshakespeare>), New South Wales (http://internetshakespeare.uvic.ca/Library/facsimile/book/SLNSW_F1/), Penn (<http://sceti.library.upenn.edu/sceti/printedbooksNew/index.cfm?textID=firstfolio&PagePosition=1>), Saint-Omer (<http://www.purl.org/yoolib/bmsaintomer/19039>), and Stuttgart (<http://nbn-resolving.de/urn:nbn:de:bsz:24-digibib-bsz34999692X6>). The only copy behind a paywall is the Folger's copy number 7, which is available through Early English Books Online. While this book was in production, two more copies were digitized and placed online: one from the Harry Ransom Center (<http://hrc.contentdm.oclc.org/cdm/ref/collection/p15878coll70/id/921>) and one from Cambridge's University Library (<http://cudl.lib.cam.ac.uk/view/PR-SSS-00010-00006/1>). I maintain an updated list of digital First Folios, with detailed information about each copy, at <http://sarahwerner.net/blog/digitized-first-folios>.

² The curator of books at the Boston Public Library shared in an email that they are planning to add their F1 to their collection of materials on the Internet Archive. The Folger Shakespeare Library, according to emails from their Photography and Digital Imaging Department and the Head of Collection Information Services, has digitized the 18 copies of the First Folio that they are sending out on tour and will be sharing those as a discrete collection on Luna, their digital image collection platform.

³ Pagination in the First Folio, like in many early printed books, is not entirely reliable; by modern standards, the three sequences of pagination in F1, each corresponding to the three genres, can be tricky at first. But the pagination errors and repetition do not really impede a user's ability to find their way through the volume.

⁴ R.B. McKerrow, *Prolegomena to the Oxford Shakespeare: A Study in Editorial Method*, Oxford: Clarendon Press, 1939; William Shakespeare, *The First Folio of Shakespeare*, edited by Charlton Hinman, New York: W.W. Norton, 1968.

⁵ William Shakespeare. *The Norton Shakespeare*. Edited by Stephen Greenblatt, et al. Third edition. New York: Norton, 2015.

⁶ Norton claims copyright over Hinman's Through Line Numbers, and Meisei uses TLN with Norton's permission; it is not clear from ISE's website whether they have sought Norton's permission. While it is true that Norton claims copyright over TLN, the idea of through numbering is a system of counting that has long been in place in textual scholarship. I am not a lawyer, but it is not clear to me whether their permission is needed to number the Folio text's lines sequentially and to offer that as a navigational system for a facsimile.

⁷ Case law in the United States, where most of the digital F1s are produced, suggests that digital images of First Folio are in the public domain. The 1999 decision by the District Court for the Southern District of New York in *Bridgeman Art Library v. Corel Corp.* held that exact photographic copies of public domain works could not be copyrighted because they lacked originality (36 F. Supp. 2d 191 [S.D.N.Y. 1999]). Jurisdictions outside the United States have different interpretations of whether such images can be copyrighted.

⁸ Creative Commons (<http://creativecommons.org>) specializes in making licenses that allow for the reuse of copyrighted works under a variety of flexible terms, specifically geared toward use by educators, cultural heritage organizations, and artists. A number of the digital First Folios currently available use CC licensing.

⁹ I am using context fairly specifically here to mean context about the First Folio, not context about Shakespeare. The Internet Shakespeare Editions, for example, provides a great deal of context about Shakespeare and his plays, but none about the First Folio. On the other hand, Penn's English Renaissance in Context (ERIC) project, from which their F1 originates, includes not only the digitization of a wide number of texts, but the creation of tutorials on early modern printing and other helpful resources on using Renaissance printed texts. Unfortunately, it is not easy to find those tutorials, or the digitized copy of Peter Blayney's *The First Folio of Shakespeare* (Washington, DC: Folger Shakespeare Library, 1991) that is also part of ERIC. If the limitations of past technology makes some context hard to find, the constant growth of these sites means that the availability of new resources is always shifting. The Bodleian is continuing to expand the capabilities of their digital First Folio, and it is possible that it will grow to include such contextual resources. The Folger is also planning to offer a new section of their website to coincide with their 2016 F1 tour, including an online F1 book reader and perhaps additional contextual resources.

¹⁰ See http://library.leeds.ac.uk/special-collections/view/591/4_digitising_the_first_folio and <http://internetshakespeare.uvic.ca/Library/facsimile/overview/about.html>.

¹¹ A curious illustration of this trend: when UMI filmed books for its series, they often included a target card that typically indicated the book they were filming, the institution holding it, the call number, and the date it was filmed. EEBO, however, removes the target card from both the digitized microfilm and from its item record. So while its record of the First Folio indicates that it is of an original at the Folger Shakespeare Library, it is only by referring to the microfilm that you can learn that it was filmed on 19 December 1957 and that it was copy no. 7.

¹² *Sprint for Shakespeare*. Accessed 4 October 2015. <http://shakespeare.bodleian.ox.ac.uk/>.

¹³ *English Renaissance in Context*. Accessed 4 October 2015.

<http://sceti.library.upenn.edu/sceti/furness/eric/index.cfm>.

¹⁴ *Rare Book Room*. Accessed 4 October 2015. <http://www.rarebookroom.org/>.

¹⁵ *World Digital Library*. Accessed 4 October 2015. <http://www.wdl.org/>.

¹⁶ A list of uncorrected pages appearing in the digitized copies is available on my catalog of digitized copies.

¹⁷ As a quick refresher, in a folio, one sheet produces two leaves; a leaf has two sides, each of which is a page, or a recto or verso of that leaf. Conjoined leaves are leaves that are part of the same sheet; they are joined together and when they are incorporated into gatherings, they are typically left conjoined. In collational formulas, conjoined leaves are indicated with colons: sig. A1:6 refers to the sheet that consists of leaves 1 and 6 of the gathering signed A. Sheets that are inserted into a gathering but not part of the signing sequence are typically noted with a + following the signature they follow; A5+1 indicates the leaf following the signature A5; A5+1:2 is the conjoined sheet inserted after A5. I am, throughout this discussion, following the collational formula determined by Peter Blayney that is now standard. Anthony James West provides a useful history of efforts to determine the proper collational formula for the First Folio and the vexing problem of the preliminaries ('A Model for Describing Shakespeare First Folios, With Descriptions of Selected Copies.' *The Library* 6, 21, no. 1 (1 January 1999): 1-49. doi:10.1093/library/s6-21.1.1.). There is also a helpful description of the printing issues of the portrait and a diagram of the leaves in Erin Blake and Kathleen Lynch's 'Looke on his Picture, in his Booke: The Droeshout Portrait on the Title Page.' In *Foliomania! Stories behind Shakespeare's Most Important Book*. Owen Williams, ed., with Caryn Lazzuri. Washington, DC: Folger Shakespeare Library, 2011. pp 21-31.

¹⁸ Julie Ainsworth, 'Digital Image Capture Specifications Summary,' Folger Shakespeare Library internal documentation, 16 June 2010. Available online through 'Q & A: Julie Ainsworth, Head of Photography and Digital Imaging,' *The Collation: A Gathering of Scholarship from the Folger Shakespeare Library*, 17 October 2011, <http://collation.folger.edu/2011/10/q-a-julie-ainsworth-head-of-photography-and-digital-imaging/>, accessed 5 October 2015.