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SHAKESPEREAN APPARATUS: EXPLICIT TEXTUAL STRUCTURES AND THE IMPLICIT NAVIGATION OF ACCUMULATED KNOWLEDGE

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Résumé de l'article

Dans son exploration du potentiel pour la navigation hypertextuelle mis en place par la nouvelle compréhension du terme « texte » dans les humanités, l'article analyse une activité traditionnelle propre à la recherche — la préparation de notes pour une édition critique (ici celles des sonnets de Shakespeare). Il propose d'étendre le type d'interaction que permettent les outils avancés d'analyse textuelle à l'ensemble du matériel qui peut être lié au texte. Qui plus est, les patrons sémantiques, surtout lorsqu'on les identifie avec des outils informatiques, opèrent de façon similaire au lien hypertextuel.

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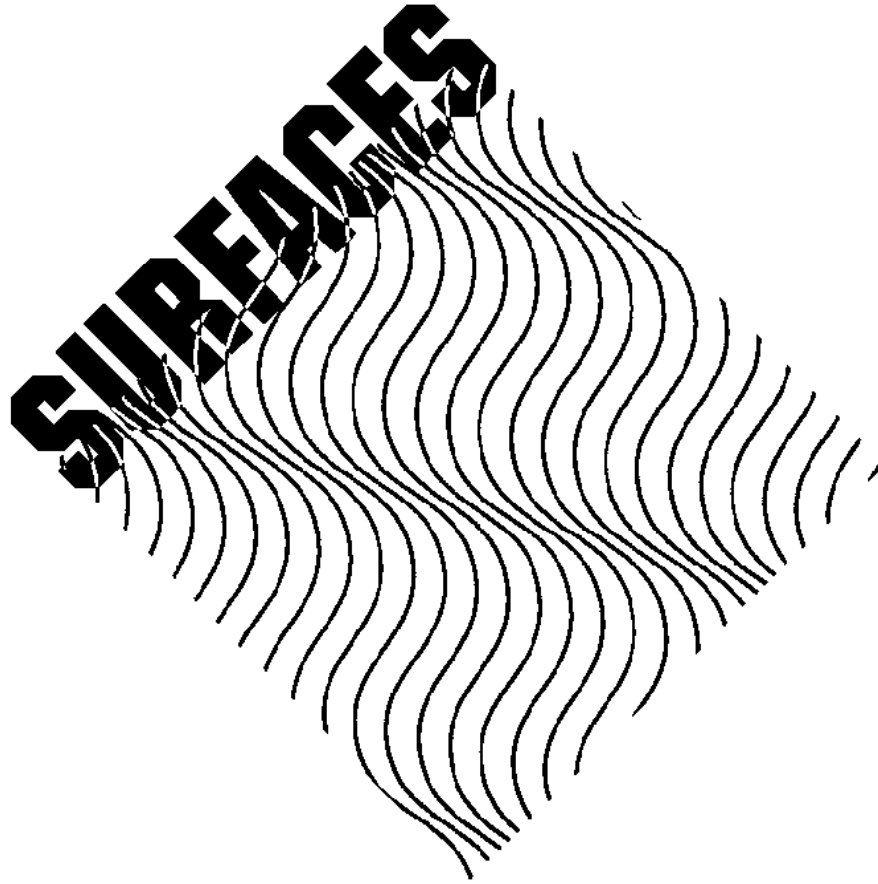
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SHAKESPEREAN APPARATUS
EXPLICIT TEXTUAL STRUCTURES
AND THE IMPLICIT NAVIGATION
OF ACCUMULATED KNOWLEDGE

Raymond G. Siemens

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RÉSUMÉ

Dans son exploration du potentiel pour la navigation hypertextuelle mis en place par la nouvelle compréhension du terme «texte» dans les humanités, l'article analyse une activité traditionnelle propre à la recherche — la préparation de notes pour une édition critique (ici celles des sonnets de Shakespeare). Il propose d'étendre le type d'interaction que permettent les outils avancés d'analyse textuelle à l'ensemble du matériel qui peut être lié au texte. Qui plus est, les patrons sémantiques, surtout lorsqu'on les identifie avec des outils informatiques, opèrent de façon similaire au lien hypertextuel.

ABSTRACT

In its exploration of the potential for hypertextual navigation offered by the new humanistic understanding of text, the article analyzes a traditional humanistic activity — that of annotating a scholarly edition (in this case, one of Shakespeare's sonnets). It asserts that the interaction allowed by advanced textual analysis software are transferable to all the material that can be linked to the text. Moreover, semantic patterns, especially those identified with machine facilitation, operate in ways akin to hypertextual links.

Associating the concerns of the humanist with issues of technology, Northrop Frye commented over a decade ago that

. . . three of the most seminal mechanical inventions ever devised, the alphabet, the printing press, and the book, have been in humanist hands for centuries. The prestige of humanists in the past came largely from the fact that they lived in a far more efficient technological world than most of their contemporaries. (7-8)

The technologies to which Frye draws attention — the alphabet, the printing press, and the book — are, notably, associated foremostly with textual culture; his comments, which were presented as a keynote address at the 1989 joint international conference of the *Association for Computers and the Humanities* and the *Association for Literary & Linguistic Computing*, would contextualize that conference's consideration of comparatively-recent computing technology with relation to its more established predecessors. While acknowledging that text and the machinery involved in its creation, manipulation, and dissemination have had a firm place at the centre of the humanistic identity, one of the main points of Frye's address is found in an argument that is directly associated with what is often acknowledged to be the source for the idea of *hypertext*: this is Vannevar Bush's "As We May Think," in its expression of the idea of "building a trail of many items" through textual materials. Bush's discussion of the problems — specifically that of management — associated with the gross accumulation of scientific knowledge is re-articulated by Frye in a discussion of the *Wissenschaft* period of humanistic knowledge accumulation; of this period, Frye comments:

/pp. 5-6/

. . . its great scholars amassed an awesome amount of information. Its imaginative model was the assembly line, to which each scholar “contributed” something, except that the aim was not to produce a finite object like a motor car, but an indefinitely expanding body of knowledge. (4)

The problems associated with Wissenschaft-era accumulation have been more recently elaborated in the terms of the *new humanist* by Bill Winder, who concludes that our own period, the neo-Wissenschaft era, “brings with it . . . issues of retrieval and reuse,” noting that the challenge for us is to be “as efficient at retrieving the information we produce as we are at stockpiling it”; we are to do so with the assistance of the computer, the “humanist’s machine.”¹

My intention in tracing such a development — Frye’s thoughts on the technologies of humanism and on Wissenschaft-era accumulation, Bush’s earlier comments on much the same as well as the idea of hypertext, and Winder’s argument about the new humanist’s role and our own neo-Wissenschaft era — is to suggest an appropriate context for the concerns of this paper, a paper in which I tread a path others have walked before. The frame of reference for my paper² is *text*, and the textual edition,

¹ Winder (164, 165).

² I wish to thank the Killam Trust, and the University of Alberta, for its generous support during the time in which this article was written. A version of this paper was presented on the MLA Committee for Scholarly Edition’s “Creation and Use of Electronic Editions” panel at the meeting of the Modern Language Association, San Francisco (28 December 1998), and this paper also draws upon some material from earlier conference presentations: “Annotating Shakespeare,” “A worlde of wordes,” “Disparate Structures,” and “The art of mightie words.”

/pp. 6-7/ with a promise in my title of discussing the navigation of textual structures and, presumably, hypertext. Within this frame of reference, it is especially important to note the appropriateness of the specifically-humanistic context into which Frye and Winder transpose the challenge presented by the more scientifically-oriented Bush. This is so not only because of the way in which hypertextual theory has, in recent years, seen assimilation into a common humanistic understanding of what it is one means by *text*;³ this is so, also, because of the way in which a new humanistic understanding of text — and the textual edition⁴ — contributes, firstly, to a notion of hypertext that has evolved significantly since its early articulation by Bush and, secondly, to the problem of information management and navigation that was articulated some fifty years ago by Bush, and has been re-articulated since by Frye and Winder, among others, with regard to literary materials. Lastly, my title's reference to "Shakespearean apparatus" is intended to narrow that focus slightly, gesturing toward the process of scholarly annotation — a process which has, for a generation of humanists interested in electronic textuality, become a touchstone for hypertext's incorporation into the electronic scholarly edition — and, specifically, gesturing to annotation as it might apply to the examples on which I rely in this paper drawn from the work of Shakespeare.

³ Oft-cited in reference to this are Delany and Landow (*Hypertext*, and *The Digital Word*), Landow (*Hypertext*, and *Hyper / Text / Theory*), Ted Nelson, and Keep *et al.* (as a primer on hypertext), among others.

⁴ In the context of some humanities computing techniques, Fortier notes that it is text that is at the heart of concerns in literary studies. On hypertext and scholarly editions, see Landow ("Hypertext," and "Footnotes"), Faulhaber, McGann, Lavagnino, Siemens ("Disparate Structures"), and the articles in Finneran, among others.

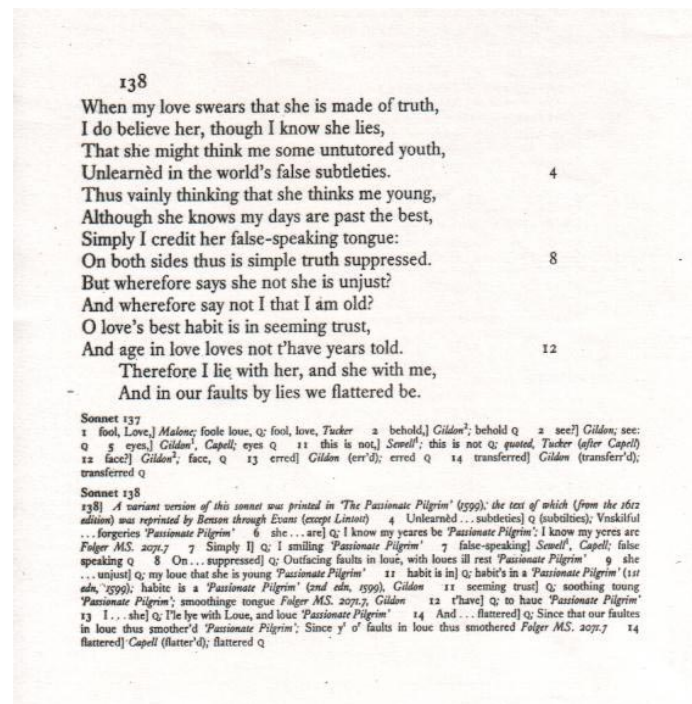
/pp. 7-8/

What We Already Do: Presenting and Annotating the Text of Shakespeare's Sonnet 138

Perhaps the best way to begin is with a practical example, one taken from Shakespeare's *Sonnets*, and one with which many may already be familiar: "When my love swears that she is made of truth" (#138).

A good print edition's rendering of Sonnet 138, taken from G.B. Evans' recent edition (101), is given in Figure 1.1. /pp.8-9/

Figure 1.1



There is much that is familiar — and, to my mind, much that is reassuring — about such a presentation. We understand, in looking at an example such as this, that the text has been modernised and regularised. We also understand the ways that the various parts of the text — the sonnet and its textual apparatus and annotations — interrelate with one another.

For one used to working with such an edition regularly, the reading eye moves seemingly in a natural manner (should one wish it to) between the lines of verse and the lines of textual commentary. Seeing that there are no accidental variants, one presumes that only substantive variants are being treated; using the information given, related versions of the sonnet can be reconstructed. And, noting that there is nothing by way of gloss and interpretive notes, the trained reader may also, without thinking much about it, use a finger or bookmark for easy passage to the commentary's assumed place later in the book (256-7; see Figure 1.2). A note in that commentary, I should add, discusses the mutual association of sonnets 138 and 144 through their printing in *The Passionate Pilgrim* (1599) and directs us to it. It also directs us to other texts, primary and secondary materials, that can inform our reading of the sonnet. Fingers or bookmarks may hold places in the book, but the eye and mind move about, working from place to place — text, textual apparatus, and commentary — associating each with each, but always with the text of the sonnet as the main point of interest; other materials are encountered in relation to it, and those that are encountered are present because of their ability to illuminate the sonnet.⁵

/pp. 9-10/

⁵ Should one wish another style of presentation, or the presentation of different text-related materials, one would use another style of edition: say, variorum (with a more conservative presentation and, likely, a wider textual collation, with a history of pertinent criticism; see Rollins' edition [1.353-5]; later, this is seen in Figures 3.1, 3.2, and 3.3) or diplomatic/documentary (transcription or

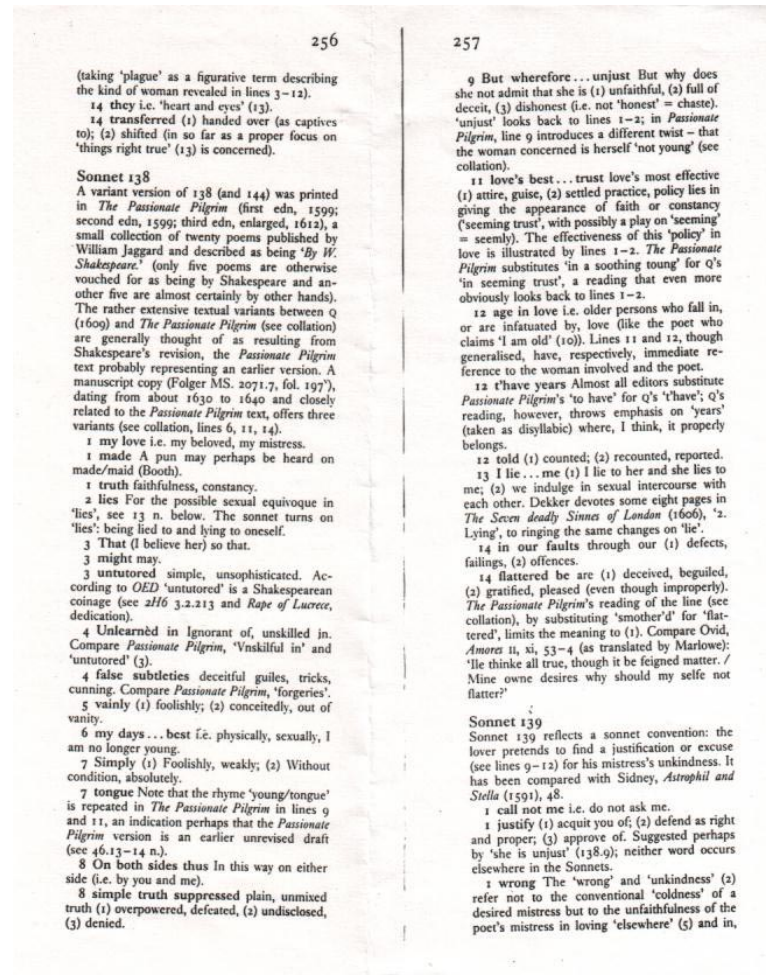


Figure 1.2

facsimile, or both, with notes and commentary off the page; see Booth's edition [118-9, 476-81]).

Such ideas about visually ‘navigating’ an edition are commonplace, and my conclusion regarding those ideas is equally so. Because we are familiar with the type of display (text, apparatus, and commentary) used by Evans, we already understand the ways in which such editions associate related texts and textual materials; moreover, we understand these ways to the extent that they are seemingly intuitive.

Formalising Associations in the Electronic Medium

It is that intuition on which most of us draw when we approach the scholarly edition in the electronic medium — an artifact that is increasingly being referred to as the hypertextual edition or the electronic edition. Before turning to a discussion of the electronic edition, though, let us consider one further aspect of the print edition. In the print edition, the idea of the “trail of many items” upon which Bush pontificated is implicit, it is understood to exist, and rarely needs explicit articulation. While we regard such association of one thing and the next as something that can be navigated intuitively on the page or across several pages, and while in our familiarity we regard the structures through which we navigate to be implicit, a trail is clearly and explicitly there. That trail is established by the editor, based on materials left us by the author and others, and is presented to us in a familiar, accepted manner.

What we typically do now when we bring such a text into the electronic medium — that is, when we do it as professionals with attention to scholarly standards — is to formalise, to make explicit, the seemingly-intuitive relation of one thing and the next; we build, hypertextually, that trail of many items of which Bush spoke. This is a relatively straightforward procedure, wherein (over one or more electronic documents) materials associated /pp.

11-12/ with the central text are presented, and the individually-associated bits of information are hypertextually linked. As many of us are familiar, passages for which there are variant readings or annotations are, in a hypertextual edition, marked in such a way that the reader knows that selecting that textual passage (with a mouse, pointing and clicking) will lead to a display of variant readings or annotations; such passages would be associated, again typically, by lines of code in the electronic text that set out exactly that, if a certain piece of marked data is selected, another piece of specifically-demarcated data will be displayed. By way of example, in our text of Sonnet 138 the following relationship of materials that are presented in the print edition would be formalised by hypertextual links:

Text (l. 14): And in our faults by lies we flattered be.

Marked text (as per Evans' edition): And in our faults by
lies we flattered

Linked to (textual apparatus):

Q; Since that our faultes in loue thus
smother'd *'Passionate Pilgrim'*;
Since y^t o^r faults in loue thus
smothered *Folger MS. 2071.7*

The relation of the text to materials in the commentary operate in a similar fashion, as follows:

Text (l. 14): And in our faults by lies we flattered be.

Marked text (as per Evans' edition): flattered be

Linked to (commentary [Evans' ed. 256-7]):

/pp. 12-13/

are (1) deceived, beguiled, (2) gratified, pleased (even though improperly). *The Passionate Pilgrim*'s reading of the line (see collation), by substituting 'smother'd' for 'flattered', limits the meaning to (1). Compare Ovid, *Amores* II, xi, 53-4 (as translated by Marlowe): 'Ile thinke all true, though it be feigned matter. / Mine owne desires why should my selfe not flatter?'

Selecting a passage of marked text leads us from that text to its linked apparatus and/or commentary, much as our mind, eye, and fingers might work together in unison with the print edition itself.

Considering 'Inclusivity' — Print and Electronic

When we bring such a text to the electronic medium, we typically do something else as well: we participate — or at least desire to participate — in a trend towards greater inclusivity. Directly associated with the flexibility and economics of storage in that medium as compared to print, when we bring a text to the computer we tend to wish to provide more than is provided in print editions, we tend naturally to move towards being more fully comprehensive — linking with a collection of textual and critical materials, providing fuller commentary, and so forth. This tendency ensures that an electronic edition, again typically, will contain a number of linked associations covering material beyond what one might expect in a print edition. Thinking of Shakespeare's Sonnet 138, we may consider that version provided by *The Arden Shakespeare CD-ROM* which, for all its texts, provides extensive textual witnesses in digital /pp. 13-14/

facsimile form, draws upon the complete body of materials (introduction, commentary, and textual notes) associated with its second series editions and also

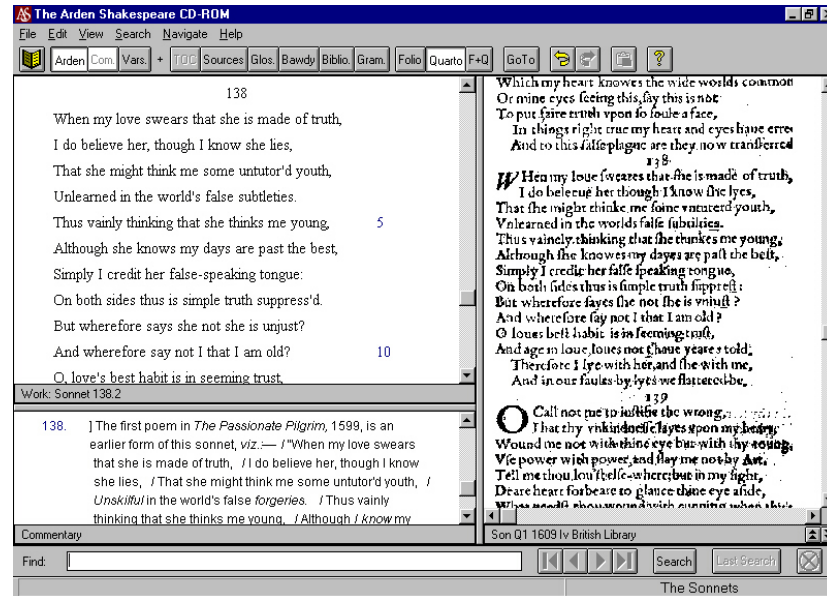


Figure 2

includes a number of scholarly works helpful to the student and reader of Shakespeare.⁶ (Of several 'views' of the text and test-related materials that are possible via this edition's delivery software, one view is seen in Figure 2.)

/pp. 14-15/

⁶ Among these scholarly works are Bullough's *Narrative and Dramatic Sources of Shakespeare*, Bevington's *Shakespeare bibliography*, Abbott's *A Shakespearean Grammar*, Onions and Eagleson's *A Shakespeare Glossary*, and Partridge's *Shakespeare's Bawdy*. A further discussion of this edition can be found in my "Review of the Arden Shakespeare CD-ROM: Texts and Sources for Shakespeare Studies," in *Early Modern Literary Studies*, at <URL: http://purl.oclc.org/emls/04-2/rev_siem.html>.

Given this trend toward further inclusivity, those faced with the pragmatics of such editing might ask this question: where does such inclusivity of materials related to the edition end? One answer to this is that inclusivity ends with a choice made by the individual editor, who could only be expected to have so much breadth and depth of knowledge, time, and patience, for a project. Expressed in a recent paper, such a conclusion was reached after one editor's desire to include everything was quelled by the realisation of what including everything meant in terms of editorial labours — with reference also to the act of relating everything properly to everything else.⁷

While I think we all have sympathies with this view, another answer must also be considered. As mentioned earlier, Bush articulated a model of scholarly production and an idea regarding the navigation of the increasingly-unnavigable body of knowledge that was being produced; as well, Frye articulated (as has Winder) the need for humanists to turn their attention to navigating that body of knowledge as it relates to their own discipline. For each, their notion of inclusivity was something that was total — a notion in keeping with the frame of reference for materials in the electronic medium provided by early hypertext guru Ted Nelson. The hypertextual world envisioned by Nelson involves an inclusivity that ends only with all the related matter to be found in the medium;⁸ here, each individual work is /pp.15-16/

⁷ See Graver, whose argument was presented and well received, before publication, at the 1997 Modern Language Association conference.

⁸ This may well be, as John Lavagnino has suggested to me privately, a transference to the electronic medium of the desire for 'total libraries' that evolved from library cataloguing movements in the late print era. More specific to my example of Shakespeare's work is the range of materials that Louis Marder would, ideally, have appear in a definitive edition; he notes:

a small part of a much larger whole, a whole united by topic and clearly connected by hypertextual associations that link related materials. As one of the most prominent literary hypertextual theorists of the past two decades has noted, the “Nelsonian vision . . . ultimately requires all texts to be linked together in a universal web or docuverse.”⁹ While all materials extant in electronic form will not, of course, be generated by a single individual, the work of the individual will take its place as part of a much larger whole, a whole made up of individual components that have points of relationship (sometimes called “nodes”) and that can be navigated with reference to those points.

For scholarly editions in the print medium, the challenge of inclusivity has resulted in the gathering and presenting, in a useful and condensed form, as much material as relates reasonably to a text, given a specific context. The best example of inclusivity in the print medium is the variorum model, with its extensive survey of text, scholarship and criticism. Our understanding of the scope that such editions are felt to hold is well-expressed by Hyder E. Rollins, editor of the 1944, two-volume /pp. 16-17/

Eventually, when everything necessary for further study will have been stored in a constantly updated Shakespeare data bank . . . and all the relevant information on every given act, scene, place, word, or line is retrievable on command, we may have the means for a universal, up-to-date, constantly improving, eclectic “edition” of Shakespeare. (29)

On how this might be accomplished, he continues:

My solution is to call for a moratorium in the making of editions, and the writing of articles, too, for that matter, . . . and the channeling of efforts . . . to devise a project (for which I already have a preliminary plan) to computerize all that is known about Shakespeare’s life, times, and work . . . (29)

⁹ Landow (“Hypertext Editions”).

variorum edition of Shakespeare's *Sonnets*; he notes, in his preface to that edition, that "To read all, or nearly all, the 'literature' under which Shakespeare's sonnets are submerged is a wearisome task that, at least up to the date 1942, should not have to be repeated" (v). This task should not have to be repeated because the variorum edition provides the apparatus necessary for the navigation of those materials up to the date of the edition's preparation. In examining Rollins' edition, one notes that — above and beyond presenting a text, a collation, and commentary along the lines of what Evans offers — Rollins provides a critical/scholarly survey for each sonnet, and a commentary geared towards the expression of earlier engagements of the piece (see Figures 3.1, 3.2 and 3.3.)

Like with the model provided by Evans, the way in which one navigates a variorum edition can be similarly duplicated in electronic hypertextual structures, the difference between the variorum and Evans' edition chiefly being the organisation that each brings to the types of material each presents. The variorum, by cataloguing and building on previous scholarship in an overt way as it does, brings an organisation to that material that allows one to navigate the related scholarship in addition to the text and its immediate commentary. The editorial labours involved — the "wearisome task" that Rollins referred to — are not light.

Nor are such labours light when we attempt to make explicit, in an electronic edition, the sorts of organisational patterns we find in the print variorum model. Moreover, when we accept inclusivity as it is defined in the electronic medium, it becomes apparent that in addition to the concerns associated simply with getting the material into the proper form, there is the further concern of relating that complex body of material to other pertinent materials available in electronic form. The materials — given the scope of inclusivity native to the electronic medium — /pp. 17-18/

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138

When my loue sweares that she is made of truth,
 I do beleue her though I know she lyes,
 That she might thinke me some vntuterd youth, 3
 Vnlearned in the worlds false subtilties.
 Thus vainely thinking that she thinkes me young,
 Although she knowes my dayes are past the best, 6
 Simply I credit her false speaking tongue,
 On both sides thus is simple truth suppressed:
 But wherefore sayes she not she is vniust? 9
 And wherefore say not I that I am old?
 O loues best habit is in seeming trust,
 And age in loue, loues not t'haue yeares told. 12
 Therefore I lye with her, and she with me,
 And in our faults by lyes we flattered be.

Printed from the 1612 P. P. version by Ben., Gild.-Evans. 11. *habit is in* *habit's in a P. P.* (1599 [1st ed.]). *habite is a P. P.* (1599 [2d ed.], 1612), Ben., Gild.-Evans.

4. *Vnlearned...subtilties* *Vnskilful* *seeming trust* *soothing tongue*
forgeries P. P., Ben., Gild.-Evans. *P. P.*, Ben. *smoothing Tongue* Gild.-Evans.

6. *she knowes my dayes are* *I*
know my yeares be P. P., Ben., Gild.-Evans.

7. *Simply I* **I smiling P. P.*, Ben., Gild.-Evans.
false speaking *Hyphened by*
Sew., Mal. +.

8. **Outfacing faults in loue, with*
loues ill rest. P. P., Ben., Gild.-Evans.

9. *she not...vniust* **my loue that*
she is young P. P., Ben., Gild.-Evans.

12. *I* *Lint., Bull. to P. P. and the rest.*

13. *I...her...she* *I le...Loue...loue*
P. P., Ben., Gild.-Evans.

14. *Since that our faulter in loue*
thus smother'd be. P. P., Ben., Gild.-Evans.

A version of 138 appeared as sonnet 1 in the P. P., the first edition of which apparently belongs to the year 1599. The unique, fragmentary copy of that edition was issued in a colotype facsimile by ADAMS late in 1939. All the sonnet commentators and editors up to 1940 have been familiar only with the second (1599) and third (1612) editions of the P. P. In the first edition the sonnet runs thus:

When my Loue sweares that she is made of truth,
 I do beleue her (though I know she lies)
 That she might thinke me some vntutor'd youth,
 Vnskilful in the worlds false forgeries.
 Thus vainly thinking that she thinkes me young,
 Although I know my yeares be past the best:

Figure 3.1

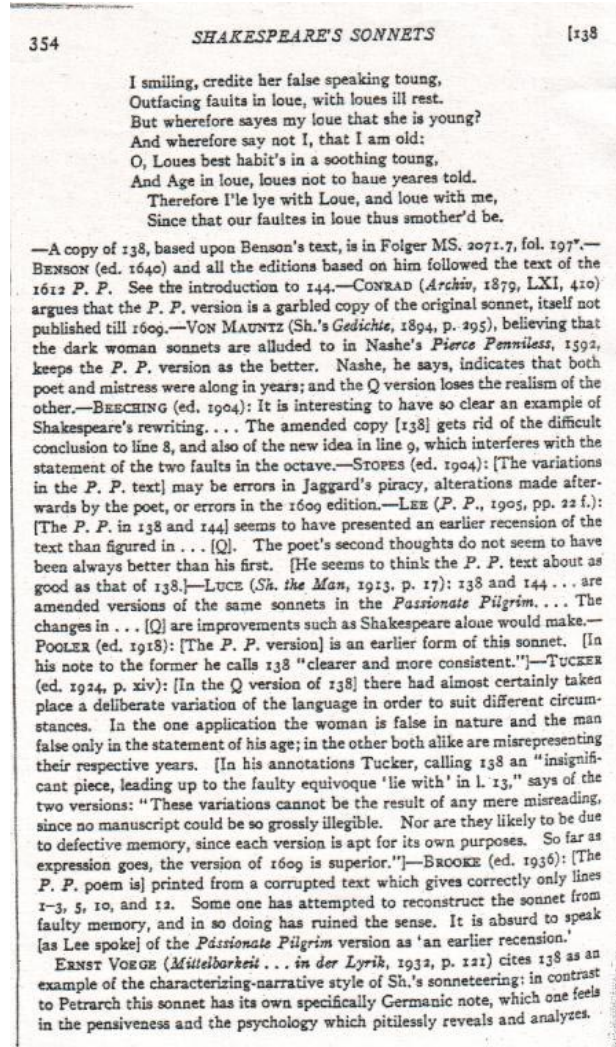


Figure 3.2

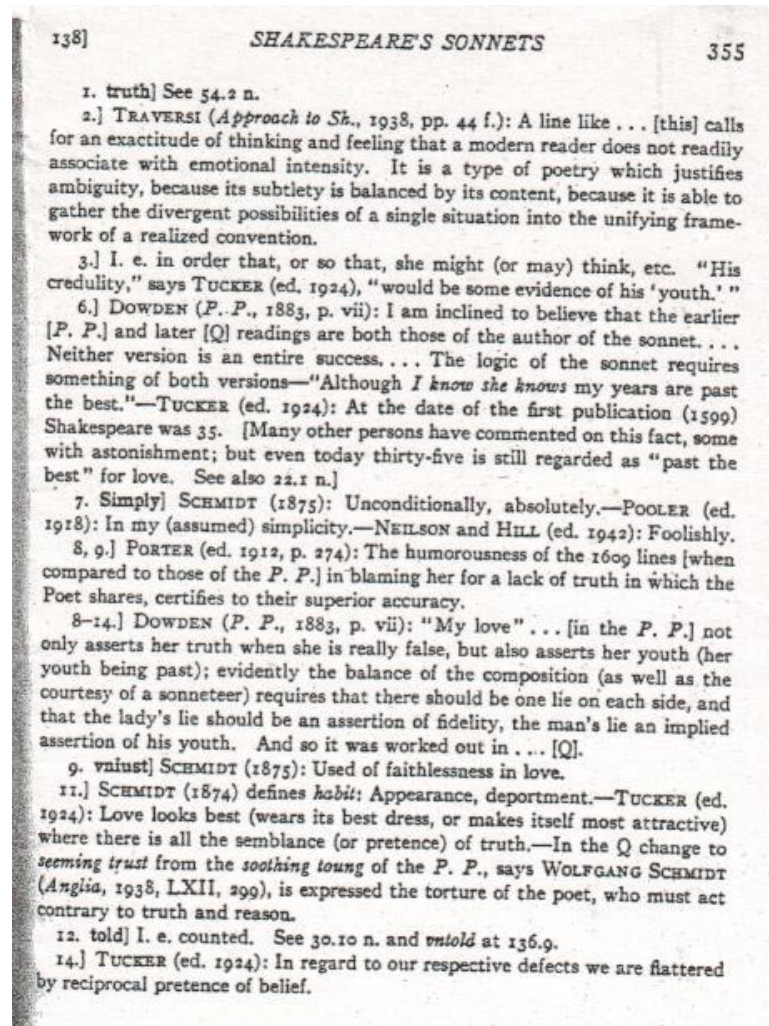


Figure 3.3

will likely seem too many, and the process impossibly time consuming.

Recognising pragmatic limitations — of editorial labour, budgets, the deployment of symbolic capital in academe — and also recognising the valuable and important nature of the information provided in print editions, variorum and otherwise, we might best consider directing our editorial efforts to the electronic re-production (the recycling) of print-based editions in the electronic medium with a conception of inclusivity and association-of-textual-materials drawn from the variorum of the print medium. In effect, this would involve formalising with hypertextual links the associations that, in print, we understand intuitively and, thus, making more explicit and more immediately navigable the paths over which past editors have pored. As well, we might consider the duplication of this model in new, non-print-based variorum-like electronic editions; such a path has been recommended before, and with good justification.¹⁰

To proceed in this manner, however, is to accept something less than the medium promises to allow. As excellent contributions to scholarship as variorum editions are, they are objects that attempt to represent or fix, at a single moment in time, the work of an unfixed, ever-evolving — and thus dynamic — scholarly community engaged in, as Frye notes, the process of stockpiling scholarship. Electronic editions that live up to the potential of the medium, especially in terms of the inclusivity that it allows, must also be *dynamic*; they must be able to navigate the contents of the edition in familiar ways, and also able to reflect and draw upon the growing, evolving, and /pp. 21-22/

¹⁰ A related suggestion is found in Landow (“Hypertext Editions”).

unfixed stockpile of scholarship that relates to the matter of the edition.¹¹

Explicit Structures and Implicit Relations in all Text

Elsewhere, I have discussed two dominant perspectives on the electronic scholarly edition: one, called the *dynamic text*, consists of an electronic text and advanced textual analysis software and presents, in essence, a text that “indexe[s] and concord[s] itself, allowing the reader to interact with it in a dynamic fashion”;¹² the other, called the *hypertextual edition*, “exploits the ability of hypertextual organisation to facilitate a reader's interaction with the apparatus (textual, critical, and otherwise) that traditionally accompanies scholarly editions, and with relevant external textual and graphical resources, critical materials, and so forth.”¹³ I have also urged that the two perspectives on the electronic scholarly edition should be united in practice — as they are, seemingly, in theory — so that the reader of such an edition could take advantage of both dynamic interaction with the text *and* its related materials, and also reap the benefits of the fixed hypertextual links that typify the standard relation of materials we find in a scholarly edition.

¹¹ As well, literature on the subject suggests also that they must reflect the “archive” model of the electronic scholarly edition that Jerome McGann has recently championed (see also Ross), and the “operative paradigm for the hypertext document,” which is the “electronic library” — in which “the reader encounters multiple points of authority, unexpected juxtapositions, and frequent occasions for making choices” (Landow “Footnotes”).

¹² See my “Disparate Structures” (9); such a text of the *Sonnets* is provided by Ian Lancashire and Hardy Cook, eds., *Shake-speares Sonnets*.

¹³ Faulhaber (“Textual Criticism” 134 ff.).

/pp. 22-23/

In this paper, I wish to suggest the possibility that the level of interaction one can enjoy with an electronic edition itself, if facilitated in the style of the dynamic text, can replace much of the interaction that one typically has with a text's accompanying materials via explicit hypertextual links in a hypertextual edition. That is, I wish to assert that the principles of interaction allowed by a dynamic text are transferrable to the realm of textual apparatus and commentary, and well beyond into all materials in the medium that relate to the matter of the edition at hand. The ideas associated with a text that indexes and concords itself are portable to the idea of an edition (perhaps best called a *dynamic edition*) that has the ability, in effect, to annotate itself and provide its own apparatus, an electronic edition that employs sophisticated software to automate the process of formalising the associations we take for granted in editions akin to Evans' presentation of Sonnet 138 and that assists in the navigation of scholarship in ways akin to Rollins' variorum presentation of the same sonnet.

Such an edition embraces an electronic context and notion of inclusivity that Bush, Frye, Winder and Nelson have articulated; such an edition also requires that a significant amount of related scholarly material is available in electronic form. While much of this material is not yet available, what has been called the "interoperable digital library" — part of the emerging Global Information Infrastructure — is envisioned to provide much of this, and work on it progresses, albeit slowly.¹⁴ A number of critics have argued that World Wide Web is, essentially, already this,¹⁵ though it will be some time yet before materials /pp. 23-24/

¹⁴ See E. Fox, and his extensive references; also Delany (*Universities*).

¹⁵ See, for example, Landow ("Footnotes").

available on the World Wide Web will reach a state of development such that they will have as prominent a place in scholarship as that accorded a research library; that said, this day will come.

What does exist today is a growing ability to manage, and to navigate, what is available in relation to our electronic scholarly editions in a dynamic fashion. This navigation is rooted in humanistic assumptions of the relations that exist within and among texts; it rises out of an accepted understanding of intertextuality. A hypertext, which in its best definition is a “multisequentially read text,”¹⁶ embraces such an understanding, and implementations of hypertextual structures rely on the fact that one instance of textual material has association with other instances; in short, such structures rely on the fact that intertextuality exists.

Returning to my example, textual witnesses of Sonnet 138 relate to one another because of their similar textual makeup; while they are unique and individual text instances, we associate them because of their makeup, their content. Much of the material contained in Evans’ gloss on Sonnet 138 also relates to that sonnet because of its own makeup — definitions that assist in our understanding of the text of the sonnet, explanations, notes of relations with other texts, and so forth. So, too, with the scholarly discussions that bear on Sonnet 138 as catalogued and presented in Rollins’ edition. All these things relate to one another — and, specifically, to the text of Sonnet 138 — because of the nature of their textual content; they have intertextual relations, /pp. 24-25/

¹⁶ As per Landow.

and they participate in a common network of associations that, in this case, centre on Sonnet 138.¹⁷

Intertextual relations — and, more specifically, the *extent* of intertextual relations — have historically been very difficult to establish; however, this difficulty is diminishing, especially as textual analysis evolves in areas having to do with the relationship of content within and among texts. These relations are most straightforwardly established in the electronic medium by giving close attention to the resonance of explicit structures within the text, among words and phrases (sometimes, in the field of content analysis, referred to as “semantic patterns”). This attention is word-centred, but not simply so; the ability to track resonating structures relies on the computer’s power and potential in determining document content and, more specifically, word-oriented-context.¹⁸ Success in being able to follow intertextual associations lies in the computer’s ability to follow a word or phrase and its associations, within and beyond a single text, by automatically determining and evaluating a context (large and small alike) for that word or phrase.

Though we must here look beyond the parameters that typically define the field of literary studies, a quick /pp. 25-26/

¹⁷ I recognise that my argument here is limited to textual data, but also note that developments in electronic data processing (optical character recognition, say, for graphics representing text) and advances in processing textual meta-data that accompanies non-textual data suggest that much non-textual data that one might typically find related to scholarly editions may eventually, though computing processes, be treated textually.

¹⁸ The work of Ian Lancashire, and of Don Foster, is exemplary in the way it draws upon the significance of these resonating textual structures.

glance can reveal much that is beneficial. The realm of computer indexing and language processing teaches us much about our ability to track such structures automatically.¹⁹ When tracked, these textual structures themselves are capable of operating with machine facilitation in ways akin to hypertextual links. Automatically-generated associations between textual materials can function as do links between textual structures; the structures themselves, in short, act as hypertextual-like nodes (those same bits of text, as noted earlier, that editors might manually demarcate for readers to follow by pointing and clicking). Phrases such as “conceptual-based navigation” are used to describe the act of organising and sorting through large bodies of textual data with this method and ones similar to it.

While our understanding of the mechanics of intertextuality rooted in structures extant in all texts is still evolving, a current understanding of these dynamics urges a growing affinity between linking (based on the principles of, say, editor-determined association) and automated text retrieval (as the computer can associate textual materials that relate to each other). With the assistance of existing software, textual structures themselves are able to act as agents that formalise, in an automated and dynamic manner, the relations between associated textual entities.

Shakespearean Apparatus?

Given this, we might optimistically consider the act of building a trail of many items through our accumulated knowledge as a process that is largely already completed, but /pp. 26-27/

¹⁹ While the progress in this area outpaces scholarly publication mechanisms, at the time of writing one might refer, for example, to work by Allan, Browne, Walker, and Hirata (*et al.*).

completed in a way much different than what was envisioned by Bush and a good number of his successors. As it relates to editing, rather than relying on an exemplary editor — an Evans, or a Rollins, or a good many of those who may read this paper — to build that trail and to formalise the relations that exist between materials in standard scholarly editions, we might examine further the implications of recent developments in textual computing; exploring the potential of the humanist's machine, we might consider relying instead upon those who originated the very texts that make up the body of materials related to an edition as defined by the electronic medium's conception of inclusivity.²⁰ We might, as editors, consider creating a type of edition in which we set out only the base text, and encourage our readers to use that text, and the explicit textual structures found within, as a guide to related materials that exist beyond the text itself. The "Shakespearean apparatus" I gestured towards in my title thus may, potentially, be nothing at all, and yet it has the potential to be everything in the medium that has relation to a specific instance of Shakespeare's own work.

While this may be an approach some find unfamiliar, and has some potential to be questionable in its /pp. 27-28/

²⁰ My suggestion is intentionally more optimistic than what has been suggested by Landow; in a paper of several years ago, he asks of the hypertextual edition, "What becomes of the concept and practice of scholarly annotation?" and concludes:

Clearly, linking by itself isn't enough, and neither is text retrieval. At first glance, it might seem that one could solve many issues of scholarly annotation in an electronic environment by using sophisticated text retrieval. . . . [But] . . . one cannot automate textual annotation. Text retrieval, however valuable, by itself can't do it all. ("Hypertext Editions")

implications, such is the groundwork for the scholarly electronic edition that does much to deal with Wissenschaft-era accumulation, and does much to address issues that currently face the new humanist concerned with the management, retrieval, and re-use of scholarly materials. With computer facilitation, this edition operates in a truly dynamic fashion: it annotates itself and assists in making its own apparatus, it automates the process of formalising the associations we take for granted in editions akin to Evans' presentation of Sonnet 138, and it assists in the navigation of scholarship in ways akin to Rollins' variorum presentation of the same sonnet. Moreover, this edition does so in an environment typified by an ever-growing and ever-evolving body of scholarship.

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