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John Webster, the dark and violent playwright?

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In the fictional encounter between William Shakespeare and a young John Webster in *Shakespeare in Love*, Webster expresses his enthusiasm for violence and "plenty of blood" in drama, saying he got his taste for this from having watched and acted in Shakespeare's *Titus Andronicus*. He claims, "They cut my head off," (perhaps he played Mutius) and elaborates, "I like it when they cut heads off and the daughter mutilated with knives" (Lavinia). The boy Webster vows, "When I write plays, they'll be like *Titus*," and, as if to prove his point, he feeds a live mouse to a cat before concluding, "That's the only kind of writing."[1] The cameo portrait of Webster as an apprentice in masochistic pleasure, as learned from the early works of Shakespeare, raises questions about their relative status as dramatists of disturbing emotions. Is Webster a lesser disciple of the master-Bard, or does he outdo Shakespeare in writing tragedies of violence and blood?

Tom Stoppard's film script draws wittily on Webster's literary reputation stretching to the present day. Writing in 1808, Charles Lamb believed that the "dialect of despair" and the skillful spectacles of horror in *The Duchess of Malfi* were things "only a Webster can do" (Moore 52), a view shared by later admirers such as Swinburne, who praised Webster's "command of terror" as the chief mark of his genius (Moore 112). In 1823 the minor poet Bryan Proctor described Webster as a writer whose imagination "rioted upon the grave" and whose dreams were full of "frenzy and murder" and melancholy, concluding that he "had too gloomy a brain" (Moore 66). The *Times* review of an 1850 production at Sadler's Wells noted "a brilliant scintillation of a kind of ghastly wit" at the end of *The Duchess of Malfi*, but George Henry Lewes condemned the play as "a nightmare, not a tragedy" (Moore 87). These nineteenth-century viewpoints are perhaps best summed up by T. S. Eliot's lines "Webster was much possessed by death/And saw the skull beneath the skin." Charles R. Forker took the phrase as the title of his 1986 book *The Skull Beneath the Skin: The Achievement of John Webster*, which uses biographical research by Mary Edmonds to trace the origins of Webster's morbidity and melancholy in St. Sepulchre's parish, where, as he grew up, he heard the "passing bell" tolling for members of the parish or for prisoners led off to execution (24).[2] Steven Marche has affirmed that a "fascination with death and the dead *is* uniquely central to Webster's drama" but argues that that this obsession "can only be explicated by means of his complex eschatology" (80), an awareness that the final judgment is always beyond the reach of human understanding and is therefore always a source of deep uncertainty and incompleteness. In Webster, according to Marche, "everything is coloured" by a dark sense of lack (92).

This article seeks to explore the truth of such claims that negative feelings are particularly intense in Webster's drama by conducting computer-assisted analyses of the language of emotion in his two most famous tragedies, *The White Devil* (1612) and *The Duchess of Malfi* (c. 1614). Rather than focusing on violence exclusively, our analysis surveys both negative and (the lack of) positive emotions more widely. Language is clearly central to the mediation of emotions. In 1960, Roman

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Jakobson posited an "expressive or emotive" function among his six language functions, which "aims at a direct expression of the speaker's attitude toward what he is speaking about" (354). These days, the old transmission model of communication whereby a speaker could use certain words to instill certain meanings and/or emotions in a hearer are long gone. Generally, communication is seen as a much more fluid affair and one that is played out in the ebb and flow of conversation, an activity in which both the speaker and hearer are involved. Emotional language can have an effect on the speaker as much as the hearer. In early modern studies, scholars such as Gail Kern Paster have explored the way in which emotions flood the body "literally as the humors course through the bloodstream carrying choler, melancholy, blood and phlegm to the parts" (14). Cognitive approaches to drama have argued that playgoers respond physiologically to the enactment of feelings on stage, resonating with a mirrored emotional experience (McConachie).[3]

Using computers to retrieve knowledge from large quantities of text has become increasingly popular with the advent of digital humanities. Analyzing the language of emotion across large sets of language data is usually referred to as "sentiment analysis." The initial impetus for the development of sentiment analysis computer programs was, in fact, commercial. Companies wished to know whether product reviews were generally positive or negative. In our first study, we use SentiStrength (http://sentistrength.wlv.ac.uk/), a program that is designed to classify not only positive and negative emotion in language, but also its strength. In our second study, we draw on the corpus analysis and comparison tool Wmatrix3 (http://ucrel.lancs.ac.uk/wmatrix/), which is able to annotate running text automatically with emotion-related terms (positive and negative) (i.e., it can add codes indicating particular emotions to words in electronic text). A problem that both of our studies encounter is that they deploy programs that were designed for present-day language. It is a truism that all language experiences change. Writing of Shakespeare, R. S. White suggests that

> Thorough analysis might reveal that most if not all words used by Shakespeare to describe states of mood and emotions are false friends in carrying meanings or at least connotations differing from those we assume today. (287)

Furthermore, there are words that carried a particular emotion in the past but do not now, and vice versa. Even the word *emotion* was not the one that Shakespeare would have used. That would have been *passions*. We will briefly describe the steps we have taken to bridge the diachronic gap.

Our two studies analyze the language of emotion in Webster's *The White Devil* and *The Duchess of Malfi* and compare these plays with Shakespeare's plays—specifically, the thirty-six plays that appear in the First Folio in respect to the first study and, subsequently, Shakespeare's ten tragedies (as identified in the First Folio) in the second study. In so doing, we seek to contribute something new to a long tradition of critical comparison that goes back to Webster himself. In his preface to the reader of *The White Devil*, Webster defends himself against detraction by comparing his work as "a tragic writer" with that of his worthy contemporaries, including "the happy and most copious industry of Master Shakespeare," Dekker, and Heywood, "wishing that what I write may be read by their light."[4] Webster's wish was fulfilled in a string of critical responses that praise his ability to "imbibe the imagination of Shakespeare," but contrast him negatively in terms of both emotion and value. Nathan Drake observed that "where his master moves free and ethereal, an interpreter for other worlds," Webster strives to "break free from terrestrial fetters" (Moore 55). William Watson argued that when "in the presence of Shakespeare, we feel ourselves in communication with an inexhaustible reservoir of vitality," but if we turn to Webster "it is like exchanging the breath of morn for the exhalations of the charnel. An unwholesome chill goes out from him" (Moore 148). Our linguistic study of negative and positive emotion seeks to evaluate such comparisons.

We have analyzed *The White Devil* and *The Duchess of Malfi*, the two tragedies that dominate in critical evaluations, as the most likely repositories of "unwholesome chill" in Webster's writing. While many works attributed to Webster are collaborations, these two plays are by Webster alone. Each is clearly defined as "Tragedy" in the first editions, unlike Webster's other unequivocally single-

authored text *The Devil's Law-Case*, which is advertised as "*A new Tragecomedy*."[5] As D. C. Gunby notes, *The Devil's Law Case* (1616) is "planned from the first with a tragicomic denouement in mind" and, as such, "stands in direct descent" but distinctive from "the two great tragedies" (Gunby 28–29). *The White Devil* (1612) and *The Duchess of Malfi* (1614) are chronologically close to Shakespeare's writing career, the latter being staged by the King's Men, the company from which Shakespeare had recently retired. Drake's view that the apprentice Webster longed to succeed the "inimitable excellence" of "his master" (Moore 55) is borne out by Webster's close connection with the King's Men in 1614–18, though it was John Fletcher who collaborated with Shakespeare and took over as their lead playwright.[6] In 1819 Edwin P. Whipple argued that "of all the contemporaries of Shakespeare. Webster is the most Shakespearian," a remark that prompts us to be ready for similarities between their language in the broad survey of our first comparative study. Whipple's sharp observation that Webster's genius was "influenced by its contact with one side of Shakespeare's many-sided mind" (Moore 102) suggests the greater significance of our second study, which narrows the comparison to "one side" of Shakespeare's "many-sided mind": that which is represented by the tragedies.

The basics of SentiStrength, the program we use in our first study, are relatively simple. It uses a lexicon of 2,608 terms (and term stems). Each term has been assigned a score for the strength of its positive or negative emotion, the scores ranging from 1 (no positive sentiment) to 5 (very strong positive sentiment), and from −1 (no negative sentiment) to −5 (very strong negative sentiment). The program then matches the words in the target text with its lexicon and applies the appropriate scores. The cleverer side of the program involves rules that cover negation, booster words (e.g., *very*), idioms, multiple consecutive emotion terms, and multiple punctuation (see Thelwall et al. for details). Even so, SentiStrength struggles with words whose meanings strongly depend on context. It does not easily cope with sarcasm, for example. Nevertheless, it is unlikely that a single text is so thoroughly soaked in sarcasm as to throw the general results off course. In this study, we have used a version of SentiStrength constructed for early modern English, as described in Culpeper et al. Focusing on the period 1550 to 1700, Culpeper and colleagues considered each term in SentiStrength's present-day lexicon. They deleted the term if it did not exist or adjusted the score if its strength of emotion had changed (an obvious instance of this is the word *gay*, meaning "happy" in the early modern period and thus gaining a rating of +4). The scoring was assisted by the *Oxford English Dictionary, The Historical Thesaurus of English*, various historical corpora, and the authors own knowledge of the language of the period. They added 65 words to the lexicon that have subsequently fallen out of use (e.g., *smite*). The final lexicon included 2,538 terms. Finally, they asked an early modern scholar to score 1,607 random sentences for emotional strength, positive or negative, and compared them with results from SentiStrength, in order to check that it would deliver acceptable results.

Figure 1 displays the average negative emotion strength in Webster's two plays and thirty-six plays by Shakespeare. The averages are calculated by dividing the total of the negative emotion scores for each play by the number of lines in the play.[7] This takes some account of the fact that the plays vary in length.

As Figure 1 shows, Webster's plays are not exceptional in terms of having a large quantity of strong negative emotion in their language. Both plays, which are fairly similar, sit more or less in the middle of the range represented by Shakespeare's plays, far away from the dark history plays such as *Richard II* and from the light comedies such as *The Taming of the Shrew*.

Figure 2 displays the average positive emotion strength in Webster's two plays and thirty-six plays by Shakespeare.

The striking thing that Figure 2 shows is that Webster's plays have less positive emotion in them than any Shakespeare play, apparently confirming Watson's impression of an "unwholesome chill" in Webster in comparison to "inexhaustible vitality" in Shakespeare. Considered together, Figures 1 and 2 suggest that the perception of Webster's plays being dark is due to a lack of positive emotion, as opposed to an excess of negative emotion. However, the findings represented in Figures 1 and 2 only concern overall quantities of negative or positive emotional strength. Our second study will
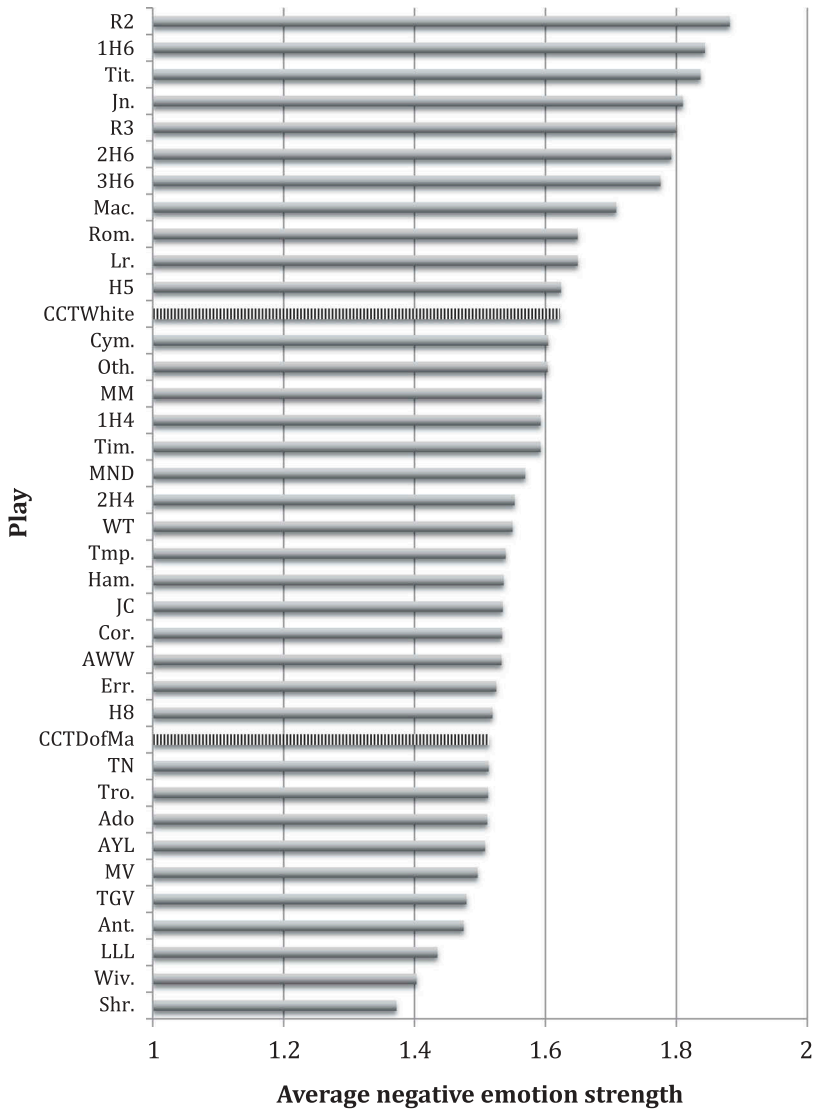
Figure 1. The average negative emotion strength in Webster's *The White Devil* and *The Duchess of Malfi*, and 36 plays by Shakespeare.

investigate whether particular types of emotion have a stronger presence in Webster's plays than in a comparative group of Shakespeare's.

The practicalities of exploring the playwrights' use of particular emotions in some detail dictates that we use a smaller dataset. Because the two Webster plays are tragedies, this second study involves a comparison with the ten plays identified as tragedies by Shakespeare's first editors (who were also Webster's contemporaries). Our choice of texts that represent "one side" of Shakespeare's "many-sided mind" (Moore 102) aims to mitigate the problem that any differences in emotional register may relate to differences in genre. Although the title pages of quarto versions classify some of Shakespeare's history plays as tragedies, and the generic boundaries given in the title page of the First Folio are porous, we have stuck to the Folio's categorization of tragedies, omitting *Troilus and Cressida* and *Cymbeline*. The former satiric comedy was inserted, removed, and reinserted belatedly into the Folio's "Tragedies" and not listed in the "Catalogue" or contents page, perhaps
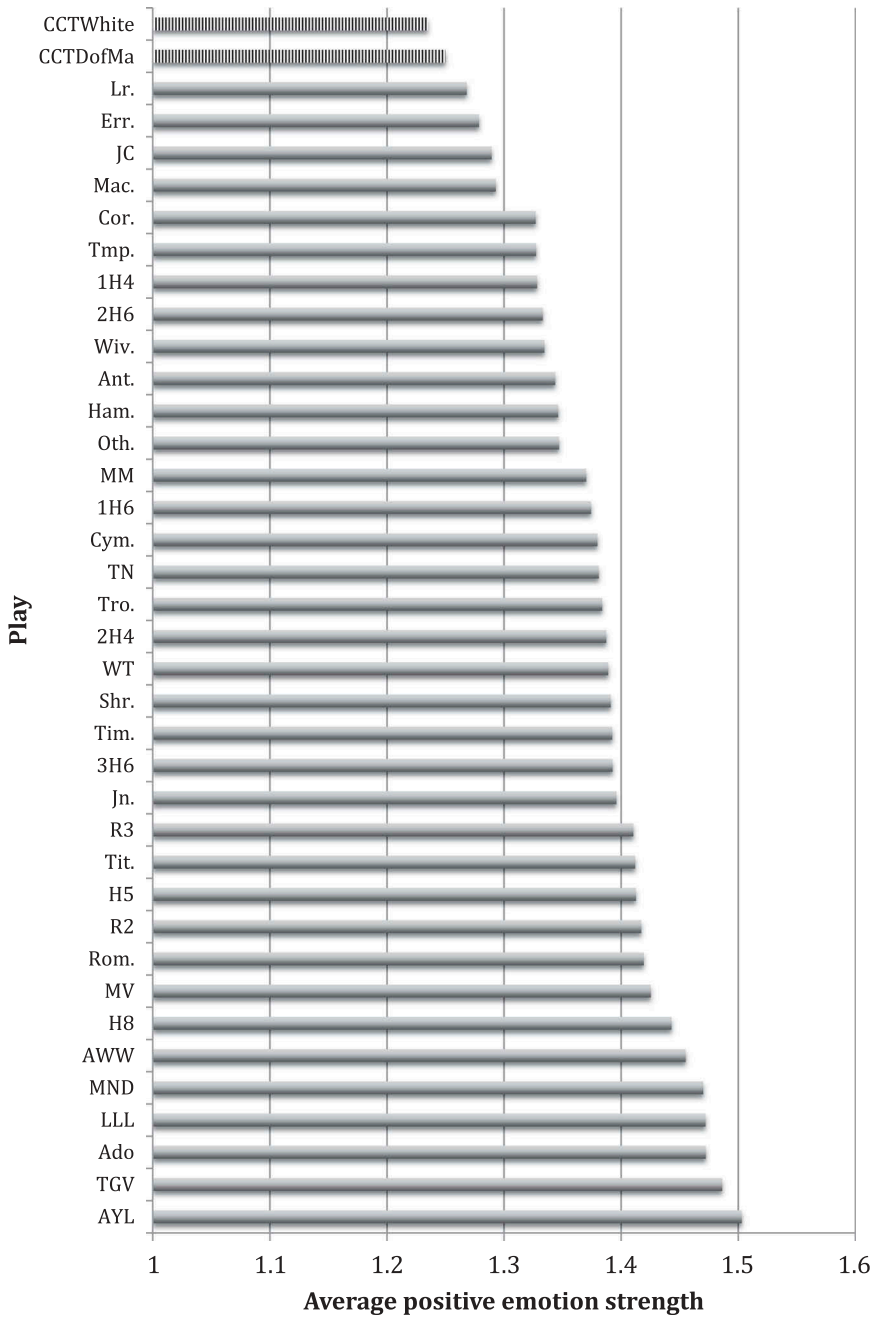
Figure 2. The average positive emotion strength in Webster's *The White Devil* and *The Duchess of Malfi*, and 36 plays by Shakespeare.

suggesting some problem with its inclusion. The latter is, like *The Devil's Law Case*, a tragicomedy. We have assumed that the remaining ten plays most closely represent a linguistic profile of tragedy as understood by Heminges and Condell, the editors of the 1623 Folio, and Shakespeare and Webster's contemporaries. We have used Wmatrix3 (Rayson) for this second study because it allows its users to identify particular types of emotion, within a text, at the semantic field level

(Archer et al.).[8] The way it works is not dissimilar to SentiStrength, with the principal exception that words are assigned to semantic fields, including certain emotion types. These emotion types include Liking, Dislike, Calm, Violent/Angry, Happy, Sad, Content, Discontent, Bravery, Fear/ Shock, Confident, and Worry/Concern, as well as a more General Emotion category.[9] Once the two Webster tragedies and Shakespeare's ten tragedies were uploaded into Wmatrix3 and annotated, we were able to use the filtering systems within the online tool to derive frequencies for each of these emotion types. The words constituting the emotion types were compiled into tables and scrutinized, especially for historical validity. The frequencies of the words that comprise the emotion types are displayed in Table 1.

Relative frequencies, expressed as percentages, are important in this case, as we are comparing datasets of different sizes (two of Webster's plays with ten of Shakespeare's tragedies) and thus need a means of knowing the proportion of each emotion type within each dataset, as opposed to simply how many times they occurred (i.e., the number of words tagged with a particular emotion type). We thus calculated two types of relative frequency. For one, we divided the raw frequency of each emotion type by the total number of words in that dataset; for the other, we divided the raw frequency of each emotion type by the total number of emotion words in that dataset. In order to establish which differences between relative frequencies are statistically significant, we applied the Fisher exact test.[11]

As both the raw and relative frequencies in Table 1 highlight, Angry/Violent and Sad are the most frequent emotion types for both authors, a result that is, of course, not unexpected for tragedies. If we focus on the frequencies regarding specific emotion types (i.e., across the rows of Table 1), interesting differences begin to emerge. The bar chart below provides a visual representation of the percentages of all emotion words column in Table 1; that is, it shows proportions of eleven of the emotion types for the two Webster tragedies and Shakespeare's ten tragedies.[12]

One of the most striking things about Figure 3 is that, overall, there is not much difference between Webster and Shakespeare. This said, a few specific emotion types do show statistically significant differences. In respect to negative emotions, they are Sad, Worry/Concern, and Dislike. They turn out to be significantly different whether one calculates the percentage according to the total number of words or the total number of emotion words. Webster uses fewer words in the

Table 1. Comparison of the frequencies of emotion types in the Webster and Shakespeare tragedies (an asterisk indicates that the difference between a relative frequency in Webster and the same emotion type in Shakespeare is statistically significant at a 5 percent level or better).[10]

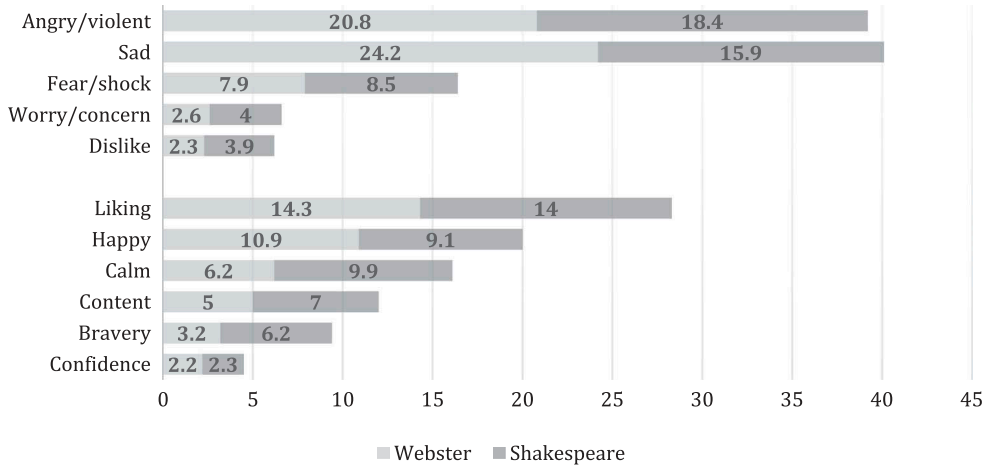| Emotion Type		Emotions in Webster's tragedies			Emotions in Shakespeare's tragedies		
		Raw freq.	Relative freq. (percentage of all words)	Relative freq. (percentage of all emotion words)	Raw freq.	Relative freq. (percentage of all words)	Relative freq. (percentage of all emotion words)
Negative emotions	Angry/ violent	224	0.45	20.8	343	0.38	18.4
	Sad	261	0.52*	24.2*	296	0.32	15.9
	Fear/shock	85	0.17	7.9	158	0.17	8.5
	Worry/ concern	28	0.06*	2.6*	74	0.08	4.0
	Dislike	25	0.05*	2.3*	73	0.08	3.9
	Discontent	4	0.01	20.8	13	0.01	0.7
	Emotions general	-	-	0.4	1	0.00	0.1
Positive emotions	Liking	154	0.31	14.3	260	0.28	14.0
	Happy	118	0.24*	10.9	170	0.17	9.1
	Calm	67	0.13*	6.2*	185	0.20	9.9
	Content	54	0.11	5.0*	130	0.14	7.0
	Bravery	35	0.07*	3.2*	116	0.13	6.2
	Confidence	24	0.05	2.2	43	0.05	2.3

Figure 3. Comparison of emotion types in Webster and Shakespeare (as a percentage).

Worry/Concern and Dislike categories than Shakespeare. However, as Figure 3 shows, these are actually very small emotion type categories as a whole. On the face of it, they are unlikely to have much influence on our perceptions of the plays. The emotion type where there is a striking difference is Sad; 24.2 percent of Webster's emotion terms are Sad terms, compared with Shakespeare's 15.9 percent—a difference that is strongly significant ($p < 0.00000762778$).

In Webster, occurrences of the word "sad" and its conjugates characterize a lasting mood rather than a pain caused by a specific event, though the word is used ironically by those characters who plot against others. Whereas in Shakespeare sadness is occasional or particular, as in Antonio's "In sooth I know not why I am so sad" (*Merchant of Venice* 1.1.1), in Webster sadness is both more pervasive and more energetic. Francisco's greeting to Zanche, "passionately met in this sad world" (5.3.219), in *The White Devil* pinpoints Webster's use of the term to indicate a force moving individuals and defining the human condition in a post-lapsarian world. Sadness taints past, present, and future in Webster, in waking life and even in sleep in the "sad dream[s]" of apprehension and of mourning by Zanche (5.3.223) and Vittoria, who dreams she "sat sadly leaning on a grave" (1.2.235) by a yew tree. It is feminized in images of loss and mourning, as for Isabella, whose loss of her husband's love is a "winding sheet" that makes her "perform this sad part" of mock widowhood (2.1.205, 225). While Brachiano calls the murder of Marcello by his brother a "sad accident" (5.2.72), it is a "perpetual sorrow" (5.2.25) to their mother, Cornelia. Cornelia's mourning with "sad elegies" is linked, like Ophelia's in *Hamlet*, to distraction, and, in both cases, their sadness is contagious. Francisco claims his eyes were "o'ercharg'd with water (5.4.61), while Laertes fears "tears seven times salt" (4.5.153) at seeing Ophelia's madness.

For all its reputation as a play of horror "accumulated to an overpowering and insupportable height" (Moore 61),[13] *The Duchess of Malfi* is, in terms of its language, dominated by a quieter, inexorable sadness. This is, in part, occasioned by events. When the Duchess is forced to leave Antonio and her children, and suspects her fate and theirs, she tells Bosola "Sad tales befit my woe" (3.5.124). Once she is imprisoned, Bosola reports, "She's sad, as one long us'd to't," and looks "Rather to welcome the end of misery/Then shun it" (4.1.3–5). Antonio likewise feels that "Some men haue wish'd to die./At the hearing of sad tidings," and when he is told of the murder of his family and is himself murdered, says "I am glad/That I shall do't in sadnes" (5.5.60–62). The spectacles of horror that made George Henry Lewes describe the play as "a nightmare, not a tragedy" (Moore 87) are counterpointed by more measured language. Bosola presents the wax corpses of the Duchess's husband and children as a "sad spectacle," designed to make her give

up the will to live, which she does (4.1.57, 61–62). Instead of being driven mad by the masque of madmen, she stoically suffers "sad misery" as a constant companion on earth and longs to converse with the dead (4.2.21, 27–31). Her brother the Cardinal is similarly addicted to sadness, so "in love with sorrow" that he "cannot part with part of it" (5.2.232–35). His guilt modifies into a desperate attempt to save his life when he cannot pray or repent and knows he is damned, and he dies declaring that "Sorrow is held the eldest child of sin" (5.5.55).

Ferdinand is the exception to the play's linguistic pattern of apocalyptic sensibility, accompanied by doubt. His madness gives him liberty to die with the ambition to bypass judgment and "affect high pleasures/Beyond death," thinking primarily of his sister (5.5.68–69). Ferdinand's pairing of pleasure with death draws attention to the way positive emotions are invariably qualified in Webster's two tragedies. The conjunction of Eros and Thanatos is typical of Jacobean tragedy, Shakespeare included (particularly in *Antony and Cleopatra*), but, as Charles R. Forker claimed, Webster was "especially drawn to the motif" (237). Ferdinand's "mirth is merely outside" and his laughter, the result of "a most perverse and turbulent nature" (1.1.160). The same could be said of Webster's two scripts. In *The White Devil*, for example, Flamineo points out that Francisco's Machiavellian plotting makes murder a laughing matter: "He'll tickle you to death; makes you die laughing" (5.3.196). Webster's coupling of positive emotions with their negative opposites goes beyond the erotic, however, and allows us to explain and to qualify the quantitative picture given in our two studies of emotion.

Study 2 reveals significant differences in the specific positive emotions Calm, Content, and Bravery.[14] These are all different in the same way, namely, the smaller proportion pertains to Webster. This is consistent with the findings of the first study, namely, that Webster is distinguished by a lack of positive emotion. In the case of the Happy emotion type, although Webster's use of the word exceeds that of Shakespeare, his deployments of the word "happy" itself are hedged round with associations of transience and danger. In *The Duchess of Malfi*, for example, the "happy comfort" (2.2.69) of Antonio and the Duchess and the birth of children are coupled with the "danger" (2.2.70) of Ferdinand's persecutory power and constantly shadowed by the apparently omnipresent "out-of-fashion melancholy" (2.1.85–6) personified by his spy Bosola. The couple's son personifies the fragility of happiness. The Duchess tells him, "Thou art happy, that thou hast not understanding/To know thy misery" (3.5.68–9). This refers not just to his immediate danger, but to a consciousness of judgment "in the eternal church," which brings a "truer sense/Of sorrow" to human beings (3.5.71–2). This preoccupation with mortality and uncertainty with what lies beyond helps to explain the low occurrence of Calm and Bravery words, and also possibly Content words, that help make Webster's tragedies seem dark(er) relative to Shakespeare's tragedies.

Overall, when compared with Shakespeare's plays, Webster's plays do not have an exceptionally large quantity of language associated with strong negative emotion (as shown by study 1). Furthermore, compared with the subcorpus of Shakespeare's tragedies (in study 2), Webster's proportions of different types of emotion, negative and positive, are generally fairly similar. Webster's reputation for shocking spectators or readers with violence and horror seems, rather, to come from the deployment of spectacle, the passionate actions and often perverse desires of characters, rather than the way they speak. Nevertheless, the evidence of study 1, which is confirmed by study 2, shows that, when compared with Shakespeare's plays, Webster's two plays do have an exceptionally small quantity of language associated with strong positive emotion. Furthermore, the affective power generated by such words is often qualified by the juxtaposition of negative terms suggesting the transience of any positive emotion. An atmosphere of uncertainty and insecurity explains the significantly smaller proportion of Calm and Bravery emotion words in Webster than in Shakespeare, and the significantly fewer words relating to Content. Lack of Content in Webster relates not just to this world but to a sense of incompleteness, inadequacy, and uncertainty about judgment after death. This is present in Shakespeare, too, but it is configured very differently. Hamlet's fear of "the undiscovered country from whose bourn/No traveler returns" (3.1.78–9) is exacerbated by the appearance of the ghost, of course. His "dread of something after death" (3.1.77)

is focused primarily on himself, his own "conscience" and the sins of suicide or murder, rather than on a final judgment. Webster's characters, by contrast, are supremely aware of the fallen nature of humanity. It is undoubtedly true that Webster's scripts show an obsessive interest in earthly ends. The words "death" and "dead" occur 161 times in Webster's two tragedies, testifying to the truth that he "saw the skull beneath the skin," as noted by Eliot. It is, however, Webster's preoccupation with what lies beyond death that creates the overarching darker mood in his two tragedies. Webster's Duchess speaks from beyond the grave with "a face folded in sorrow" (5.3.45), and Antonio realizes it is "impossible/To fly your fate" on earth or after death (5.3.34–5). Such an awareness helps to explain why, compared with Shakespeare's tragedies, the proportion of the Sad emotion type is significantly greater in Webster.

Notes

1. *Shakespeare in Love*, directed by John Madden, scripted by Tom Stoppard and Mark Norman (Miramax/ Universal Pictures 1998).
2. Forker notes that, as a member of the Common Council of the parish, Webster's father was one of the signatories to the appointment of a sexton to visit prisoners before their executions "by means of an underground passage between the church and the prison," ringing a handbell and encouraging them to prayer and repentance, a macabre practice that Bosola alludes to in *The Duchess of Malfi* (21). Because part of the Websters' coach-making business was located in Cow Lane, next door to the printing house of William White (where *Love's Labour's Lost, Henry VI, Richard II*, and *Pericles*, among other play texts, were published), Forker speculates that this could have been a site "for Webster the dramatist to have met his more famous coeval."
3. On Webster's challenge to the conventional gendering of affective rhetorical power, see LaPerle.
4. Webster's self-defense seems to have been occasioned by a hostile reception of the tragedy at the Red Bull Theatre, where "the breath that comes from the uncapable multitude is able to poison it" (*To the Reader* 3). His determination to praise the work of Shakespeare, Dekker, and Heywood as living monuments without tombs anticipates Jonson's dedicatory poem in the First Folio.
5. Webster collaborated with Marston, Dekker, Drayton, Chettle, and Ford. *Appius and Virginia*, the other tragedy attributed to Webster, is thought to have been written or co-written by Thomas Heywood, whose work Webster praises alongside that of Shakespeare and Dekker in the preface to *The White Devil*.
6. Our two Webster plays, *The White Devil* and *The Duchess of Malfi*, are sourced from the Comparative Corpus of Playwrights, a corpus associated with the *Encyclopedia of Shakespeare's Language* project (http://wp.lancs.ac. uk/shakespearelang/). The original texts are drawn from Early English Books Online-Text Creation Partnership (http://www.textcreationpartnership.org/tcp-eebo/). *The White Devil* is dated 1612 and the *Duchess of Malfi* 1623. However, the language, especially the spelling, has been regularized by Jane Demmen to facilitate computer searches. For Shakespeare, we use Demmen's regularized version of Mike Scott's Shakespeare corpus (http://www.lexically.net/wordsmith/support/shakespeare.html), which in turn is drawn from the 1916 edition of *The Oxford Shakespeare*, edited by W. J. Craig (publicly available from the Online Library of Liberty, http:// oll.libertyfund.org/). Scott's corpus contains the thirty-six plays in the First Folio, plus *Pericles*.
7. Calculating the length of a play by the number of lines in it is not, of course, a perfect measure, but it will at least offer an approximation. Counting words does not necessarily offer a straightforward alternative, as the principles along which the Webster plays were regularized may not be the same as those for the Shakespeare plays, which could affect the number of word forms. The line, as a larger unit, should be less subject to that issue.
8. Wmatrix3 also annotates at the part-of-speech level (for a description of which, see Garside and Smith).
9. The annotation tags used to identify these emotion types (within Wmatrix3) are E2+, E2-, E3+, E3-, E4.1+, E4.1-, E4.2+, E4.2-, E5+, E5-, E6+, E6-, and E1, respectively.
10. Readers wishing to examine further detail can find lists of emotion words comprising the categories here: http://wp.lancs.ac.uk/shakespearelang/papers-and-presentations/.
11. The Fisher exact test helps us to determine whether variables (such as emotion types) are related or unrelated (i.e., are dependent or independent of one another). In/dependence is determined by comparing the token frequencies for a particular value—such as "dislike"—in the two datasets, with the overall word or emotion word frequencies for the same datasets. This gives a p-value that can be used to determine statistical significance. The usual cut-off is p < 0.05 (meaning the result is significant at the 5% level). Results that meet this threshold are indicated with an asterisk in Table 1.
12. The results of "general emotion" and "discontent" have been omitted from the figure, because of a lack of occurrences.

13. William Hazlott, critic and essayist from "Lectures Chiefly on the Dramatic Literature of the Age of Elizabeth," 1819, cited in Moore, p. 61.
14. As a proportion of the total words, rather than the total of emotion words, we find similar differences for Calm and Bravery, but not for Content.

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