

EARLY MODERN LITERARY STUDIES



Turning the Tables on Bacon: Computer-Assisted Baconian Philology

Peter Pesic

St John's College, Santa Fe, New Mexico

ppesic@sjc.edu

Because of its formative role in the development of modern science, Francis Bacon's 'new organon' has long been the object of study and controversy. Students of history and philosophy of science look to his precise formulations in order to gauge the intent and character of the new natural philosophy he envisaged. This has given rise to long-standing controversies about his terminology and its meaning. For instance, a number of scholars have interpreted Bacon as having explicitly advocated the 'torture of nature,' a phrase they have taken as emblematic of the procedures and stance of experimental science as tending to violate and disbalance the natural order.¹ Others have pointed out that Bacon never used this phrase anywhere in his writings, but did describe what he called the 'vexation' of nature in

I am grateful to Christopher Johnson, Katharine Park, Andrei Pesic, Brian Vickers, and Sophie Weeks, who gave me valuable advice during the long process of revision, as did several anonymous referees; I especially thank Daniel Cadman for his exemplary editorial care. I also thank the John Simon Guggenheim Memorial Foundation for its support.

¹ Carolyn Merchant, *The Death of Nature* (San Francisco: Harper & Row, 1980), pp. 164-190 (the tenth anniversary edition [1990] includes a new preface by the author but no changes in the text); and Merchant, 'The Scientific Revolution and *The Death of Nature*,' *Isis*, 97 (2006), 513-533 (pp. 530, 532). In the intervening years, she continued to assert that Bacon's arguments 'subtly turned into sanctions for exploiting and "raping" nature for human good': Carolyn Merchant, *Radical Ecology: The Search for a Livable World*, 2nd ed. (New York: Routledge, 2005), pp. 45-46. But long before Merchant, Max Horkheimer and Theodor Adorno, *Dialectic of Enlightenment*, trans. John Cumming (New York: Herder & Herder, 1972), p. 4, read Bacon as advocating that man wholly 'dominate [nature] and other men.' In the decades after 1980, Merchant's advocacy was later cited by many others as authoritative.

ways that are not torturous or abusive.² Instead, he envisaged the process of experimentation as a struggle between a human seeker (whom he called the ‘Servant of Nature’) and a godlike figure of nature (symbolized by the sea-god Proteus), in which the *seeker* was self-tortured by doubts and reconsiderations, not Protean nature.³

In light of these textual studies, the consensus of scholars seems to have moved toward agreement that Bacon never spoke of the ‘torture of nature,’ which therefore should not be taken as a touchstone for his meaning. For instance, though Carolyn Merchant, had long argued that ‘the very essence of the experimental method arose out of human torture transferred onto nature,’ in 2009 she described that as having been ‘rather brashly concluded,’ so that we ‘are right to question that last phrase.’⁴ Nevertheless, her voluminous footnotes seem to continue the controversy by bringing forward evidence that (despite her disclaimer) the whiff of torture still

² Peter Pesic, ‘Wrestling with Proteus: Francis Bacon and the “Torture” of Nature’, *Isis*, 90 (1999), 81–94. Several other writers made similar arguments, including Alan Soble, ‘In Defense of Bacon’, *Philosophy of the Social Sciences*, 25 (1995), 192–215, rpt. (with additions and corrections) in *A House Built on Sand*, ed. Noretta Koertge (New York: Oxford Univ. Press, 1998), pp. 195–214, which mainly concerns the imputation of the ‘rape of nature’; Iddo Landau, ‘Feminist Criticism of Metaphors in Bacon’s Philosophy of Science’, *Philosophy*, 73 (1998), 47–61; Nieves H. De Madariaga Mathews, ‘Francis Bacon, Slave-Driver or Servant of Nature? Is Bacon to Blame for the Evils of Our Polluted Age?’

<<http://itis.volta.alessandria.it/episteme/madar1.html>> [accessed 25 April 2014]; Perez Zagorin, *Francis Bacon* (Princeton, N.J.: Princeton Univ. Press, 1998), pp. 121–122; and William E. Burns, “‘A Proverb of Versatile Mutability’: Proteus and Natural Knowledge in Early Modern Britain’, *Sixteenth Century Journal*, 32 (2001), 969–980. See also Brian Vickers, ‘Francis Bacon, Feminist Historiography, and the Dominion of Nature’, *Journal of the History of Ideas*, 69 (2008), 117–141, followed by replies from Katharine Park, ‘Response to Brian Vickers, “Francis Bacon, Feminist Historiography, and the Domination of Nature”’, 143–146, and Carolyn Merchant, ‘Secrets of Nature: The Bacon Debates Revisited’, 147–162.

³ Though Carolyn Merchant, ‘Francis Bacon and the “Vexations of Art”: Experimentation and Intervention’, *British Journal for the History of Science*, 46 (2013), 551–599, asserts on 575 that I have not provided ‘textual evidence that for Bacon experiment was a “heroic struggle”’ in which both the seeker and nature are ‘tested and purified,’ these characterizations are confirmed by the mythographic context going back to the hero Menelaos wrestling with Proteus (*Odyssey* 4.347–587), echoed by Virgil’s pastoral version (*Georgics* 4.315–414), from whom Bacon’s ‘Servant of Nature’ descends. See Pesic, ‘Shapes of Proteus in Renaissance Art’, *Huntington Library Quarterly*, 73 (2010), 57–82.

⁴ Carolyn Merchant, “‘The Violence of Impediments;’ Francis Bacon and the Origins of Experimentation’, *Isis*, 100 (2009), 731–760 (p. 733, n. 5).

hangs about somewhere in the Baconian air. She continues to raise doubts about the exact spectrum of meanings of ‘torture’ and ‘vexation,’ citing various dictionaries and translations of Bacon that superimpose these terms as if they were partly synonymous. Yet these secondary works date from after Bacon’s lifetime; her earliest credible example dates from 1679, while many of her other examples date from the following centuries, hence reflecting the views of later writers.⁵ But the implication of her extensive listing of these later references is that the matter is still in some doubt; indeed, some recent scholarly works continue to speak of Bacon’s advocacy of the ‘torture of nature.’⁶ If so, even though Merchant herself has conceded this point, it seems necessary to try to marshal the evidence in a definitive format.

Merchant also directs our attention to an authentically Baconian phrase, the ‘violence of impediments,’ which she interprets as indicating ‘some form of

⁵ Ibid., 749, n. 47. Merchant, ‘Bacon and the “Vexations of Art”’ cites Tenison, *Baconiana* (London, 1679), p. 41, whose locution ‘vexed and tortur’d’ she regards as a translation of Bacon’s *constrictæ et vexatæ*, though it should be noted that Tenison in general paraphrases rather than translating strictly word for word. In note 10, below, I will argue against her attempt to adduce a French translation of 1620. Most of her examples date from after 1696, the date at which Leibniz first used the metaphor of ‘putting nature on the rack’ with respect to Bacon; for the context and interpretation of this metaphor, see Pesic, ‘Nature on the Rack: Leibniz’s Attitude towards Judicial Torture and the “Torture” of Nature’, *Acta Leibnitiana*, 29 (1998), 189–197 and ‘Proteus Rebound: Reconsidering the Torture of Nature’, *Isis*, 98 (2008), 304–317 (314–316). In other writings, I have considered these issues as treated by the successors of Bacon and the first use of this much-pondered phrase by Leibniz, especially the very different understanding he had of it; see Pesic, ‘Nature on the Rack’; Pesic, ‘Proteus Unbound: Francis Bacon’s Successors and the Defense of Experiment’, *Studies in Philology*, 98 (2001), 428–456; Pesic, *Labyrinth: A Search for the Hidden Meaning of Science* (Cambridge, Mass.: MIT Press, 2000), pp. 21–28; Pesic, ‘Proteus Rebound’; and Pesic, ‘Shapes of Proteus in Renaissance Art’.

⁶ For instance, Pierre Hadot, *The Veil of Isis: An Essay on the History of the Idea of Nature*, tr. Michael Chase (Cambridge, Mass.: Harvard University Press, 2006), p. 35, asserts that ‘Francis Bacon, for instance, declared that Nature unveils her secrets only under the torture of experimentation,’ repeating that claim at several points throughout the book (originally published in French in 2004), such as pp. 93 and 340 n. 6. In part, this may reflect some French translations of Bacon that use the word *tourment* as a translation for Bacon’s ‘vexation’, such as Merchant, ‘Violence of Impediments,’ cites on 746 n. 39, 749 n. 47. Nevertheless, it seems hard to believe that the learned Hadot would not have consulted the original text nor considered the philological distinctions between these alternative words; he does not cite any of the writings that figure in the controversies about their meanings. Merchant, ‘Bacon and the “Vexations of Art”’ includes a survey of some recent writings on these issues.

violence toward nature.’⁷ Yet, as I have argued elsewhere, in order to recover Bacon’s authentic sense, we need to return to Aristotelian physics, from which Bacon drew this crucial term.⁸ In the specific context of natural philosophy, the term ‘violence’ denoted motion ‘against nature’ but did not have the transgressive sense it has in other common usages; a stone falling moves ‘naturally,’ whereas one thrown upward moves ‘violently,’ yet without thereby ‘violating’ nature.

Though there seems to have been notable progress in clarifying these issues, to resolve them even more definitively we should not only examine a few examples of Bacon’s usage of these crucial terms, as proof texts, but finally amass an exhaustive survey encompassing all his mentions. This procedure has a peculiarly Baconian slant, because he himself had advocated the systematic use of tables to collect and compare the data gleaned from many experiments. Bacon’s ‘Tables of Instances’ gather many particular observations that could then be recast as ‘Tables of Presence and Absence’ (showing correlations and anti-correlations with hypothetical causal factors), which would facilitate ‘Learned Experience [*Experientia literata*]’ proceeding from one experiment to another, thence to the ‘Interpretation of Nature [*Interpretatio Naturæ*],’ drawing axioms from those experiments that disclose the ‘summary laws of nature’ whose provenance reaches back to the seminal metaphors with which it began.⁹ For instance, by exhaustive enumeration of instances in tabular form (fig. 1), he concluded that heat was a form of motion, an amazingly perspicacious deduction at such an early point in the investigation of that subject.

⁷ Merchant, ‘Violence of Impediments,’ 733 n.5.

⁸ Pesic, ‘Francis Bacon, Violence, and Experiment: The Aristotelian Background,’ *Journal for the History of Ideas*, 75 (2014), 69–90.

⁹ See Lorraine Daston and Katharine Park, *Wonders and the Order of Nature 1150–1750* (New York: Zone Books, 1998), pp. 225–231, and *Representation in Scientific Practice*, ed. Michael Lynch and Steve Woolgar (Cambridge, Mass.: MIT Press, 1988).

XI.

Inquisitio formarum sic procedit; Super Naturam datam primo facienda est comparantia ad Intellectum omnium Instantiarum Notarum, que in eadem Naturâ conveniunt, per Materias licet dissimilimas. Atque huiusmodi collectio facienda est historicè, absque contemplatione præfæctâ, aut subtilitate aliquâ maiore. Exempli gratiâ; In Inquisitione de Formâ Calidi.

Instantiæ Convenientes in Naturâ Calidi.

1. *Radij Solis, præsertim Æstâte & Meridie.*
2. *Radij Solis reflexi & dissipati, ut inter montes, aut per parietes, & maxime omnium in speculis comburentibus.*
3. *Meteora Ignita.*
4. *Fulmina Comburentia.*
5. *Eruptiones flammarum ex Cavis montium, &c.*
6. *Flamma omnis.*
7. *Ignita solida.*
8. *Balneæ Calidæ Naturalia.*
9. *Liquida ferventia, aut calefacta.*
10. *Vapores & Fumi ferventes, atque Aer ipsæ, qui fortissimum & furentem suscipiunt calorem, si concludantur, ut in Reverberatorijs.*

Tem-

[Figure 1. Bacon's table of 'Instances Agreeing in the Nature of Heat,' from his *Novum Organum* (1620).]

Accordingly, it seems especially appropriate to apply this technique to Bacon himself, generating 'Tables of Instances' drawn from his texts and then analyzing them to test and confirm his use of crucial terms. By adopting this dispassionate (and eminently Baconian) approach, we may move beyond what some have characterized as a mere polemic between 'attackers' and 'defenders' or 'friends' of Bacon to encompass a more impartial philological study that may disclose new insights.¹⁰ The issues involved are too important and consequential to be confined to readings merely based on *parti pris*, for, as Bacon noted, 'words clearly force themselves on the intellect, throw everything into turmoil, and side-track men into empty disputes, countless controversies and complete fictions.'¹¹

¹⁰ Merchant, 'Bacon and the "Vexations of Art"' marshals and critiques those she calls the 'defenders of Bacon'; Katharine Park, 'Women, Gender, and Utopia: *The Death of Nature* and the Historiography of Early Modern Science', *Isis*, 97 (2006), 487–495, also groups 'those I think of as the Friends of Bacon [FOBs]—mostly philosophers rather than historians—who have devoted many articles to defending the Lord Chancellor from Merchant's charges that he couched his method of natural inquiry in sexist terms' (p. 490).

¹¹ *Novum Organum* OFB 11.83.

Tables of Baconian Evidence

General ‘tables’ of word usage, such as the online *Lexica of Early Modern English* (LEME), collating all English dictionaries published between 1480 and 1702, sustain the sense that ‘torture’ had a clearly negative and far stronger sense than ‘vexation.’¹² For instance, Randle Cotgrave’s *Dictionary of the French and English Tongues* (1611) glosses the French word ‘bourreler’ as ‘to torture, torment, execute, vex extreemly’ or ‘vex horribly,’ indicating that torture amplifies vexation to a superlative and horrific degree; for Cotgrave, ‘vexer’ means ‘to vex, afflict, or torment; extreemly to grieve, trouble, disquiet.’¹³ Likewise, Thomas Thomas’s *Dictionarium Linguae Latinae et Anglicanae* (1587) defines ‘excrucio’ as ‘to torment, to vex greatly.’ In general, the *Oxford English Dictionary* (OED) stresses the ‘severe or excruciating’ quality of torture, its ‘severe pressure; violent perversion or “wrestling”; violent action or operation.’ To be sure, the entry for ‘crucciare’ in John Florio’s *World of Words* (1598) includes ‘to torture’ alongside ‘to vexe, to anger, to fret,’ indicating both a certain overlap of meanings but also the predominantly *mental* sense of ‘vexation,’ compared to the exquisite bodily pains of ‘torture.’ Thus, Florio defines ‘torcere’ as ‘to torture, to torment, to vexe or grieve’ and ‘areticare’ as ‘to torment, to vexe, or afflict in minde.’ The OED also emphasizes vexation as ‘mental trouble or distress; a grief or affliction,’ even when the cause might be physical. Arguably, the meanings of ‘torture’ and ‘vexation’ grew closer during the eighteenth century, so that Samuel Johnson’s *Dictionary* (1755) gave the secondary meaning of ‘to torture’ after ‘to punish with tortures’ as ‘to vex; to excruciate; to torment.’ The mental connotation of ‘vexation’ is

¹² See Ian Lancashire (ed.), *Lexicons of Early Modern English* (Toronto, ON: University of Toronto Library and University of Toronto Press, 2013) <<http://leme.library.utoronto.ca>> [accessed 11 November 2013].

¹³ Merchant, ‘Bacon and the “Vexations of Art”’, argues that in the early French translation of Bacon’s *Le Progrez et avancement des sciences*, trans. A. Mavgars (Paris, 1624) the rendition of *arte irritata et vexata* as ‘travaux de l’art’ rests on the etymology that ‘travaux/travailler/travail’ stems from *tripalium*, an instrument of torture’ (p. 557). Yet Cotgrave (1611) defines ‘travaillé’ as ‘trauelled, toyled, laboured, much busied, or exercised in; troubled, molested, vexed, or wearied with’, far from Merchant’s torture etymology, unless we ought to understand any instance of the word ‘travail’ or related terms (such as ‘work’) as denoting literal ‘torture’.

corroborated in Johnson's definition: 'the state of being troubled; uneasiness; sorrow... a slight teasing trouble.' For Johnson also, 'to vex' meant 'to trouble with slight provocations,' indicating a significantly different intensity than 'torture.'

Even in Bacon's time, the words 'torture' and 'vexation' each had a spectrum of meanings over many different contexts, so that general lexica may not fully resolve the issue of Bacon's usage because they average over so many different sources and contexts. By collating all of Bacon's uses of these terms, we can in effect prepare a lexicon specific to him. We need to include both his English and Latin vocabulary, which (as Marta Fattori has emphasized) formed an essential part of the scholarly discourse of his time.¹⁴ This will allow close attention to questions of translation between languages by highlighting their use of their respective vocabularies in comparable contexts. Fattori herself pioneered the use of the computer to assemble such word-lists for Bacon's *Novum organum*, though we still lack comprehensive databases for all of Bacon's works.¹⁵ I will return to the larger needs for such resources; in their absence, this paper shows how presently available online resources can be used to address particular terms and their meanings, such as those under consideration here.

In Bacon's case, the problems are exacerbated by the still incomplete state of the *Oxford Francis Bacon (OFB)*, which will eventually provide a new standard edition for the whole Bacon corpus. But at present only the nineteenth century James Spedding (*SEH*) edition makes that entire corpus generally available, albeit with translations that have come under question and altogether not at the level of present-day philological standards.¹⁶ Nevertheless, *SEH* remains serviceable (with some

¹⁴ See Marta Fattori, *Linguaggio e filosofie nel Seicento Europeo* (Florence: Leo S. Olschki, 2000), pp. 89–120, 187–225, 305–330; Fattori, *Études sur Francis Bacon* (Paris: Presses Universitaires de France, 2012), pp. 119–190.

¹⁵ Marta Fattori, *Lessico del Novum organum di Francesco Bacone* (Rome: Edizioni dell'Ateneo & Bizzarri, 1980). Merchant, 'Violence of Impediments' and 'Bacon and the "Vexations of Art"' include useful tables of instances, including translations and scholarly commentaries, but not the kind of exhaustive tables of Baconian usage offered in this paper.

¹⁶ Citations from Bacon will be identified by volume and page numbers in two standard editions: *The Oxford Francis Bacon*, ed. Graham Rees (Oxford: Clarendon Press, 1996–), to be abbreviated *OFB*, of which only volumes 1, 4, 6, 11–13, and 15 have appeared as of this writing, showing the volume, page, signature, and line

caution). With that in mind, I used online digitizations of *SEH* to assemble tables of instances of each of the words under consideration, citing each within the *SEH* and also, if possible, the *OFB*. To assure that all instances were indeed included, I cross-checked the findings of the Google digitization against that of Archive.org (and then against the online searchable volumes of *OFB*).¹⁷ To facilitate comparisons between Latin and English (and better to address issues of translation), I decided to include both languages for any citation wherever possible. When the text is originally in English, Bacon's own version is given according to *OFB*; if there is no *OFB* citation, the text follows *SEH*. Where the original is in Latin, the English translation used will be that of the *OFB*; if no *OFB* citation is shown, the translation is that of the *SEH*. The Latin texts (and their citations) are set off in square brackets following the English versions. In all cases, the *SEH* citations are given; of course, no *OFB* citation is given for those works not yet included in it.

Following these procedures, Table 1 lists all the citations from Bacon's published works that use the term 'torture' in its various grammatical forms and tenses, as well as its Latin cognate *tortura*, arranged in chronological order; Table 2 does likewise for 'vexation' and *vexatio*, entries in these tables being referenced by the table number and item. [Table 3](#), of usages of 'violence' and *violentia*, is so large that it is attached separately for those who wish to consult it. (I shall refer to each table's entries by the index number listed in its left-most column.)

numbers of that edition; and *The Works of Francis Bacon*, ed. James Spedding, Robert Leslie Ellis, and Douglas Denon Heath (London: Longmans, 1857–1874; rpt., New York: Garrett, 1968), to be abbreviated *SEH*, in which the first seven volumes include the *Works*, and the succeeding volumes comprise *The Letters and Life of Francis Bacon*. Citations from *SEH* show volume and page number, with the Latin original cited in square brackets. Though I have tried to use the more recent *OFB* texts and translations wherever available, the incompleteness of this work means that, unless otherwise identified, citations from Bacon are from *SEH*.

¹⁷ In particular, *SEH* has been scanned and is readily available at

<<http://books.google.com/books?id=2FkJAAAAQAAJ&pg=PR4&dq=the+works+of+francis+bacon+vol.+I+spedding+London&lr=#v=onepage&q=the%20works%20of%20francis%20bacon%20vol.%20I%20spedding%20London&f=false>> and likewise for the other volumes. Tables 1–3 have been prepared with this edition and also the scannable extracts from *OFB* available online. Cross-checking compared the scanned versions in <<https://archive.org/details/worksfrancisbac00heatgoog>>. Regrettably, at present not all the published volumes of *OFB* have such searchable online versions, which one fervently hopes will become available soon.

	Table 1: Instances of Bacon's use of forms of the word 'torture'	Citation	Date
1:1	Let a man be abstinent from wronge, exacte in dutie, gratefull in obligation, and yet dismantelled and open to feare or dolor, what will ensue? Will not the menace of a tyraunte make him to Condemne the innocent? Will not the sence of torture make him appeale his deerest freinde & that vntruely? But paine hath taught him a new Philosophie: he beginneth to bee perswaded that it is iustice to pay tribute to nature, to yeeld to the rigor of paine, to be first good to himself; he would giue others leaue to doe the like by him, he would forgiue them if they did soe.	<i>Tribuit, or giuing that which is due</i> OFB 1.249 65.64–73	c. 1591– 1592
1:2	And in other places speakeing of the persecucion of <i>Catholicks</i> he still mencioneth bowellinge and comsuminge mens intrailes with fire, as if this were a new torture devised, wherein he doth cautelouslie and malliciouslie suppress that <i>the</i> law and custome of this lande from all antiquitie hath ordained that punishment in case of treason and permitteth no other. And a punishment surelie it is thoughe of greate terrour, yett by reason of the quicke dispach of lesse torment farre then ether the whele or forcipacion yea then simple burninge.	<i>Certaine obseruations vppon a libell</i> OFB 1.407–408 103r1944–1952	1593
1:3	This same <i>Emanuel Louys</i> , and <i>Steven Ferrera</i> also; Whereof the one, mannaged the Matter abroad; And the other, resided here, to give correspondence, never meeting, after <i>Emanuel</i> had returned, severally examined, without Torture , or Threatning, did in the end, voluntarily, and clearly, confesse the Matters above mentioned:...	<i>A true report of the detestable treason intended by Doctor Roderigo Lopez</i> OFB 1.447 X4v.379–384	1594
1:4	But then he fell, to that slender Evasion, as his last Refuge; That he meant, onely to cousen the <i>King of Spain</i> , of the Money; And in that he continued, at his <i>Arriagnment</i> ; when, notwithstanding, at the first, he did retract his own <i>Confession</i> ; And yet, being asked, whither he was drawn, either by Mean of Torture , or promise of Life, to make the same <i>Confession</i> , he did openly testifie, that no such Means, was used towards him.	<i>A true report of the detestable treason intended by Doctor Roderigo Lopez</i> OFB 1.448 X4v.402–408	1594
1:5	So the poets in tragedies do make the most passionate lamentations, and those that fore-run final despair, to be accusing, questioning, and torturing of a man's self.	<i>Colours of Good and Evil</i> SEH 7.87	1597
1:6	And therefore wee see the detestable and extreame pleasure, that Arch-heretiques, and false Prophets, and Imposters are transported with, when they once finde in themselues that they	<i>Advancement of Learning</i> OFB 4.51 L4r20–	1605

	haue a superioritie in the faith and conscience of men; so great, that if they haue once tasted of it, it is seldome seene that any torture or persecution can make them relinquish or abandone it.	L4v25; <i>SEH</i> 3.316	
1:7	[Mathematics in the sense of Ramist ‘dichotomies’] hath beene of ill desert, towards Learning, as that which taketh the way, to reduce learning to certaine emptie and barren Generalities; beeing but the verie Huskes, and Shales of Sciences, all the kernell being forced out, and expulsed, with the torture and presse of the <i>Methode</i>	<i>Advancement of Learning OFB</i> 4.125 2Q4r15–19; <i>SEH</i> 3.406	1605
1:8	And therefore the Poet doth elegantly cal passions, tortures , that vrge men to confesse theyr secrets. <i>Vino tortus & ira</i> . [Horace: Epode I.18, 38: ‘Tortured with wine and wrath.’] [Quare poëta perturbationes hujusmodi non inscite appellat Torturas , quod ab iis secreta sua prodere homines compellantur: <i>Vino tortus et ira</i> .]	<i>Advancement of Learning OFB</i> 4.167 3B2v3–5; <i>SEH</i> 3.458, 5.61 [1.774]	1605
1:9	In the end Jupiter seized Prometheus, and upon many and grave charges, —as that of old he had stolen fire, that he had made a mock of Jupiter’s majesty in that deceitful sacrifice, that he had scorned and rejected his gift, together with another not mentioned before, that he had attempted to ravish Minerva,—threw him into chains and condemned him to perpetual tortures And there was an eagle which gnawed and consumed his liver by day; but what was eaten in the day grew again in the night, so that matter was never wanting for the torture to work upon.[Postremo Prometheo Jupiter plurima et gravia imputans, quod ignis olim furtum fecisset, quod Jovis maj estatem in sacrificio illo doloso ludibrio habuisset, quod donum ejus aspernatus esset, novo etiam additio crimine, quod Palladem vitiare tentasset, eum in vincula conjecit, et ad perpetuos cruciatus damnavit.... aderat autem aquila, quae jecur ejus interdum rostro tundeat atque consumeat, noctu autem quantum comesum erat renascebatur, ut nunquam doloris materia deficeret.]	<i>De sapientia veterum SEH</i> 6.746 [6.670]	1609
1:10	Now the method is that when a very small hole has been made in the end of an egg they suck out all its substance, leaving the shell intact; then by powerful suction they strongly draw out the very air that has got in and, immediately after the suction, they stop the hole with a finger and put the egg stopped thus under water, and then finally take the finger away. Now the air, tormented [<i>tortus</i>] by this tension and striving to recover itself, draws and takes water in to the point where the portion of air regains its former consistency. I tried the same thing with a glass egg	<i>Phænomena universi OFB</i> 6.42–45 Q1r27–34, 1–4; <i>SEH</i> [3.703]	1611

	<p>and found the water taken in amounted to about an eighth of the volume, so much, that is, had the air been stretched by the suction. That remains the case whether the violence of suction is greater or smaller. Indeed, towards the end of the suction it was drawing in the lip itself. But in addition I was concerned to try a new experiment, namely, that after the suction had been completed, the hole should be well blocked with wax, and the egg so blocked left for a whole day. I did this to discover whether lapse of time diminished the air's appetite, as is the case with consistent things, osiers, iron plates and the like, whose tendency to spring back from tension weakens when it is delayed; but I found that nothing happened in such a short time but the egg drew in a similar quantity of water and just as strongly as when it had been immersed immediately after the suction, so that when its hold was opened out of the water, it still drew in fresh air with a clear hissing noise; but I neglected to test the effect after longer delay. [Modus autem est ut parvo admodum facto in extremo ovi foramine, ovi cibum universum exsurgant, integra testa; tum vero fortiter aërem ipsum, qui subintravit, exsuctione forti alliciant, & statim sub exsuctione digito foramen obturent, atque ovum hoc modo clausum subter aquam illam ponant, & tum demum digitum amoveant. Aër vero tensura illa tortus, & se recipere nitens, aquam trahit & introcipit, quousque portio illa aëris antiquam recuperet consistentiam. Nos idem cum ovo vitreo experti sumus, & aquam receptam circa octavam partem contenti reperimus; tantum scilicet aër per exsuctionem erat extensus. Sed hoc pro violentia majore aut minore exsuctionis casum recipit. Sub finem vero exsuctionis labrum ipsum trahebat. Sed præterea cura nobis fuit novi experimenti, nimirum ut, postquam exsuctio facta fuisset foramen cera bene obturaretur, & ovum ita obturatum per diem integrum maneret. Id eo fecimus, ut experiremur ut mora illa appetitum aëris minueret, ut fit in rebus consistentibus, viminibus, laminis ferreis & similibus, quorum motus ad se recipiendum à tensura, mora elanguescit; sed comperimus tantula illa morâ nihil effectum, quin ovum illud æque fortiter ac similem traheret aquæ quantitatem, ac si continuo ab exsuctione immissum esset; adeo ut etiam foramine illius aperto extra aquam novum aërem cum sonitu & sibilo manifesto traheret, sed effectum ulterioris moræ experiri negleximus.]</p>		
1:11	But as for the desires and appetites of the grosser parts and	<i>De vijs mortis</i>	c.

	the fundamental actions of their [vegetable and animal bodies'] nature, five are most worthy of attention: rest, motion of like to like, avoidance «of breaking contact or» of a vacuum, avoidance of a contrary body, and avoidance «of preternatural extension» of torture . [At desyderia et Appetitus partium crassiorum, atque actiones fontales ejus naturæ quinque sunt maximè notatu dignæ: station, latio ad homogeniam, fuga «abruptionis tactus siue» vacuj, fuga contrarij, fuga «exporrectionis præternaturalis» torturæ .]	<i>OFB</i> 6.326–327 18v7–11 [not in <i>SEH</i>] («...» denotes scribal deletions)	1611– 1612?
1:12	In this part <i>Telesio</i> does not do his job very well but acts like his opponents, who, since they make up their minds before they try anything out, when they come to particular facts, abuse their minds and the facts, and wretchedly squander and torture both; and they are nevertheless busy and (if you believe the individuals themselves) victorious; and one way or another bubbling over with their own conceit. [Qua in parte <i>Telesius</i> non admodum feliciter perfungitur, sed more Adversariorum suorum se gerit; qui cum prius opinantur quam experiuntur, ubi ad res particulares ventum est, ingenio & rebus abutuntur, atque tam ingenium quam res misere lacerant & torquent ; & tamen alacres & (si ipsis credas) victores, suo sensu utcumque abundant.]	<i>De principiis atque originibus OFB</i> 6.246–247 L11r3–L11v9; <i>SEH</i> 5.488 [3.107]	1612
1:13	Now to test what extension (no less than compression) air would put up with, I put the following into effect. I took a glass egg with a small hole at one end of it. I sucked hard at the hole to get the air out, and then immediately blocked the hole with my finger, put the egg under water, and then took my finger away. Then the air, when that stretching by suction had been done, racked [<i>tortus</i>] and dilated beyond what was natural to it, and therefore struggling to withdraw and contract itself (such that if the egg had not been put in water it would have drawn in air with a hiss), drew in an amount of water enough to let the air regain its former sphere or dimension. [Etiam ad probandum qualem Extensionem (non minùs quàm Compressionem) pateretur Aer, tale quippiam practicaui. Ouum vitreum accepimus, cum paruo foramine in vno extremo Oui. Aerem per foramen exuctione forti attraximus, & statim digito foramen illud obturaui; & Ouum in Aquam immersimus, & dein digitum remouimus. Aer verò Tensurâ illâ per exuctionem factâ, tortus , & magis quàm pro Naturâ suâ dilatatus, ideoque se recipere & contrahere nitens (ita vt si Ouum illud in Aquam non fuisset immersum, Aerem ipsum traxisset cum Sibilo) Aquam traxit ad tale Quantum, quale sufficere	<i>Novum Organum OFB</i> 11.372–373 2N1r27–36; <i>SEH</i> 4.209 [1.323]	1620

	posset ad hoc, vt Aer antiquam recuperaret Sphæram siue Dimensionem.]		
1:14	Nor has one of the recent writers done very much on this topic, having added only a few mechanical exercises and those mangled by his demonstrations. [<i>Neque ex Recentioribus quisquam opera pretium circa hoc fecit, addendo solummodò pauca Mechanica, eaque per Demonstrationes suas detorta.</i>]	<i>Historia ventorum OFB</i> 12.132–133 S1v24–26; <i>SEH</i> 5.202 [2.80]	1622
1:15	[of sheep] their coat is the curliest of all, for no other animal's hair is so tightly twisted as wool. [<i>Capillitium habent omnium crispissimum; neque enim Pilus alicuius Animalis, tam tortus est, quam Lana.</i>]	<i>Historia vitæ & mortis OFB</i> 12.180–181 F1v15–F2v17; <i>SEH</i> 5.235 [2.124]	1623
1:16	33. To bring round people who have passed out or suffered sudden catalepsy (of whom without help not a few would have perished), these treatments are available: the production of waters (which we call hot or cordial waters) distilled from wine; bending the body downwards; stopping up the mouth and nostrils; bending and twisting the fingers; [33. <i>Ad Resuscitandum eos, qui Deliquia Animi, aut Catalepses subitas patiuntur (quorum haud Pauci, absque Ope, etiàm expiraturi fuissent), hæc sunt in Vsu. Exhibitio Aquarum ex Vino distillatarum (quas Aquas vocamus Calidas, & Cordiales); Inflexio Corporis in Pronum; Obturatio fortis Oris & Narium; Flexio Digitorum cum Torturâ quâdam;</i>]	<i>Historia vitæ & mortis OFB</i> 12.338–339 2B7v20–24; <i>SEH</i> 5.317 [2.209]	1623
1:17	Thus, for self-preservation bodies are defended by nature by the four motions just mentioned, as by defensive weapons with which to guard themselves against annihilation, a vacuum, torment , and separation. [<i>Itaque muniuntur (corpora) naturâ corpora ad conseruationem ipsorum motibus quatuor prædictis, tanquam armis defensiuis, quibus se 30tueantur ab annihilatione, a vacuo, a tortura, & a separatione.</i>]	<i>Novum Abecedarium OFB</i> 13.192–193 29v28–30 [not given in <i>SEH</i>]	1622
1:18	2. The same goes for clocks (at least those driven by coiled springs) in which you see the springs' continued and steady straining to unwind themselves. [2. <i>Similis est ratio Horologiorum, (eorum scilicet quæ moventur per torturam Laminarum), in quibus videre est continuum & graduatum nixum Laminarum ad se restituendum.</i>]	<i>Historia densi et rari OFB</i> 13.122–123 E4v10–12; <i>SEH</i> 5.378 [2.283]	1623
1:19	What a proof of patience is displayed in the story told of Anaxarchus, who, when questioned under torture , bit out his own tongue (the only hope of information), and spat it into the face of the tyrant.[<i>Quantam rem in exercitio</i>	<i>De augmentis scientiarum SEH</i> 4.374 [1.581–582]	1623

	<i>patientiae</i> exhibet historia illa vulgata de Anaxarcho, qui quæstioni et tormentis subjectus linguam (indicii spem) dentibus præscidit, et in os tyranni exspuit.]		
1:20	... we often see remarkable examples [of ‘fortitude under torments’], in the practice of tumblers, in the hard living of some savages, in the stupendous strength of maniacs, and in the constancy of some persons under exquisite tortures . [Quorum omnium videmus sæpenumero exempla insignia, in practica funambulorum; in duro victu hominum quorundam barbarorum; in stupendis viribus maniacorum; et in constantia nonnullorum inter exquisita tormenta .]	<i>De augmentis scientiarum</i> SEH 4.394 [1.602]	1623
1:21	Nay, the Turks, though by race and habits a cruel and bloody people, yet are wont to give alms to brute creatures, and cannot endure to see them ill used or tortured . [Quin et Turcæ (gens licet et stirpe et disciplina crudelis et sanguinaria) brutis tamen eleemosynas largiri solent; neque animalium vexationes et torturas fieri sustinent.]	<i>De augmentis scientiarum</i> SEH 5.44 [1.758]	1623
1:22	It is harsh to torture laws, in order that laws may torture men. [Durum est torquere leges, ad hoc ut torqueant homines.]	<i>De augmentis scientiarum</i> SEH 5.91 [1.806]	1623
1:23	...in our declining years repair becomes extremely patchy, some parts being repaired well enough, others with difficulty and less well, so that from then on human bodies begins to suffer that torment devised by Mezentius, <i>that the living perish in the embrace of the dead</i> , and that the parts easily reparable give out because they are coupled with ones difficult to repair. [<i>Vergente ætate, inaequalis admodum fit Reparatio; aliæ partes reparantur satis fælicitèr, aliæ ægrè & in peius; vt ab eo tempore, Corpora humana subire incipiant tormentum illud</i> Mezentij, Vt viua in amplexu mortuorum immoriantur, <i>atque facîle reparabilia, propter ægrè reparabilia copulata, deficient.</i>]	<i>Historia vitæ & mortis OFM</i> 12.146–147 A7r13–A7v17; SEH 5.218 [2.106]; the proverbial phrase ‘torment of Mezentius’ is also used in <i>De vijs mortis OFB</i> 6.352–355, 29r16, 30r6	1623
1:24	The increasing of ability to suffer torture or pain.	<i>Magnalia Naturæ</i> SEH 3.167	1624
1:25	You shal reade, in some of the Friars Books of <i>Mortification</i> , that a man should thinke with himselfe, what the Paine is, if he have but his Finger end Pressed, or Tortured ; And thereby imagine, what the Paines of <i>Death</i> are, when the whole Body, is corrupted and dissolved; when many times, <i>Death</i> passeth with lesse paine, then the Torture of a Limme: For the most vitall parts, are not the quickest of	<i>Essays OFB</i> 15.9 B3v9– B4r16; SEH 6.379, 6.544	1625

	Sense.		
1:26	<i>Judges</i> must beware of Hard Constructions, and Strained Inferences; For there is no Worse Torture , then the Torture of Lawes.	<i>Essays OFB</i> 15.166 2S3v41–43; <i>SEH</i> 6.507, 6.583	1625
1:27	So many upon the seeing of others bleed, or strangled, or tortured , themselves are ready to faint, as if they bled, or were in strife.	<i>Sylva sylvarum</i> <i>SEH</i> 2.598.	1626

	Table 2: Instances of Bacon’s use of forms of the word ‘vexation’	Citation	Date
	* denotes an item in which a form of the word 'vexation' appears in the translation but not in Bacon's original text		
2:1	Yea, further there haue byne made Lawes more then one in her tyme for the restraite of <i>the</i> vexacion of informers & promoters, nay a course taken by her owne direccion for the repeale of all heavie and snareinge Lawes, if it had not byne Crossed by those to whom the benefit should haue redounded.	<i>Tribuit, or giuing that which is due</i> <i>OFB</i> 1.271 85.725–729	c. 1591– 1592
2:2	The intention therefore of a profound and radical change of bodies is no other than this, that matter be by all proper methods vexed , and yet both these separations in the meantime prevented. For then only does matter suffer real constraint, when every way of escape is cut off..	<i>Cogitationes de natura rerum</i> <i>SEH</i> 5.428	1604
2:3	But it is especially visible in quicksilver, which is an exceedingly crude body, and like mineral water, the force whereof (if it be vexed by fire and prevented from escaping) is not much less than that of gunpowder.	<i>Cogitationes de natura rerum</i> <i>SEH</i> 5.437	1604
2:4	...certaine it is, there is no vexation or anxietie of minde, which resulteth from knowledge otherwise than meere by accident; for all knowledge and wonder (which is the seede of knowledge) is an impression of pleasure in it selfe; but when men fall to framing conclusions out of their knowledge, applying it to their particuler, and ministring to themselues thereby weake feares, or vast desires, there growth that carefulnesse and trouble of minde, which is spoken of: for then knowledge is no more.	<i>Advancement of Learning OFB</i> 4.8 B2v3–11; <i>SEH</i> 3.266	1605
2:5	For like as a Mans disposition is neuer well knowen, till hee be crossed, nor <i>Proteus</i> euer changed shapes, till hee was straightened and held fast: so the passages and variations of Nature cannot appeare so fully in the libertie of Nature, as in the trialls and vexations of Art. [Quemadmodum enim	<i>Advancement of Learning OFB</i> 4.65 2C2r15– 19; <i>SEH</i> 3.333; <i>De augmentis</i>	1605

	ingenium alicujus haud bene noris aut probaris, nisi cum irritaveris; neque Proteus se in varias rerum facies vertere solitus est, nisi manicis arcte comprehensus: similiter etiam natura natura arte irritata et vexata se clarius prodit, quam cum sibi libera permittitur.]	<i>scientiarum</i> [1.500]	
2:6	[Men] oughte in the pursute of their owne fortune, to set before their eies, not only that general Map of the world. <i>That al things are vanity & vexation of spirit</i> [omnia essent vanitas et vexatio spiritus] ...	<i>Advancement of Learning OFB</i> 4.177 3D4r36–38; <i>SEH</i> 3.472 [4.298, 5.76]; <i>De augmentis scientiarum</i> [1.145, 1. 790]; <i>Meditationes sacrae</i> 7.260	1605
2:7	Nevertheless if any skilful Servant of Nature shall bring force to bear on matter, and shall vex it and drive it to extremities as if with the purpose of reducing it to nothing, then will matter (since annihilation or true destruction is not possible except by the omnipotence of God) finding itself in these straits, turn and transform itself into strange shapes, passing from one change to another till it has gone through the whole circle and finished the period; when, if the force be continued, it returns at last to itself.[Nihilominus si quis peritus Naturae Minister vim adhibeat materia, et materiam vexet atque urgeat, tanquam hoc ipso destinato et proposito, ut illam in nihilum redigat; ilia contra (cum annihilatio aut interitus verus nisi per Dei omnipotentiam fieri non possit), in tali necessitate posita, in miras rerum transformationes et effigies se vertit ¹ : adeo ut tandem veluti in orbem se mutet, et periodum impleat, et quasi se restituat, si vis continuetur.]	<i>De sapientia veterum</i> <i>SEH</i> 6.726 [6.652]	1609
2:8	For the heavens do not travel round on movable poles, nor again are there other points than the ones I have mentioned. Now this motion seems truly cosmical and for that reason singular except in so far as it admits both diminutions and deviations according to which this motion echoes through the universe of moveable things, and penetrates from the starry heaven to the bowels and insides of the Earth, not by some violent or vexatious compulsion, but by constant consent. [Etenim non jactantur coeli super polos mobiles, nec rursus alia sunt puncta quam quæ diximus. Atque hic motus vere videtur Cosmicus, atque ideo unicus, nisi quatenus recipit & decrementa & declinationes; secundum quae decrementa & declinationes transverberat motus iste	<i>Thema cæli</i> <i>OFB</i> 6.180–181 G10r13–G10v20; <i>SEH</i> 5.552 [3.773]	1612

	Universum rerum mobilium, & permeat à cœlo stellato usque ad viscera & interiora terras; non raptu aliquo prehensivo, aut vexativo , sed consensu perpetuo.]		
2:9	Now what <i>Telesio</i> says would have been likely if man along with the mechanical arts which vex matter were removed from nature, and the fabric of the world were regarded artlessly. For his seems a kind of pastoral philosophy which contemplates the world calmly and as if in idleness. [Atque similia veri fuissent, quæ à <i>Telesio</i> dicuntur, si homo tollatur è Natura & simul Artes Mechanicæ, quæ materiam vexant , atque Fabrica Mundi simpliciter spectetur. Nam pastoralis quædam videtur ista Philosophia, quæ Mundum contemplatur placide, & tamquam per otium.]	<i>De principiis atque originibus OFB 6.250–251 Mr17–20; SEH 5.490–491 [3.110]</i>	1612
2:10	The tenants and inhabitants of Northumberland were so vexed by war with Scotland, that they could not till their lands...	Case of <i>de non procedendo Rege inconsulto SEH 7.701</i>	1616
2:11	...whereupon a mandate by privy seal came to the court, reciting the conviction of the redisseisin.... for that the kind would not that Sherwood should be molested or vexed with any process in the king's rights....	Case of <i>de non procedendo Rege inconsulto SEH 7.702</i>	1616
2:12	I do not just put together a history of nature free and unconstrained (when, that is, it goes its own way and does its own work – as in the history of the heavenly bodies, meteors, the Earth and sea, minerals, plants and animals) but much more of nature restrained and vexed , namely when it is forced from its own condition by human agency, and squeezed and moulded. ... the nature of things shows itself more openly under the vexations of art than in its natural freedom. [...conficimus Historiam non solum Naturæ liberæ ac solutæ (cùm scilicet illa spontè fluit, & opus suum peragit; qualis est Historia Cœlestium, Meteororum, Terræ, & Maris, Mineralium, Plantarum, Animalium); sed multò magis Naturæ constrictæ & vexatæ ; nempè, cùm per Artem & ministerium humanum de statu suo detruditur, atque premitur & fingitur.... quandoquidem natura rerum magis se prodit per vexationes Artis, quàm in libertate propriâ.]	<i>Distributio operis OFB 11.38–39 C1r19–C1v31; SEH 4.29 [1.141]</i>	1620
2:13	But man when he turned back to look upon his own handiwork, saw that all of it was vanity and vexation of the spirit, and tested not at all.[At Homo conuersus ad Opera quæ fecerunt manus suæ, vidit quòd omnia essent vanitas & vexatio spiritus; nec vllo modo requieuit.]	<i>Distributio operis OFB 11.46–47 C4r1–3; SEH 4.33 [1.145]</i>	1620
2:14 *	Nor should we forget that in all ages natural philosophy has come up against a vexatious and awkward adversary:	<i>Novum organum OFB</i>	1620

	namely superstition and blind, immoderate religious zeal. [Nequè illud prætermittendum est, quod nacta sit Philosophia Naturalis per omnes ætates aduersarium molestum & difficilem; Superstitionem nimirum, & zelum Religionis cæcum & immoderatum.]	11.142–143 M4r24–25; <i>SEH</i> 4.95 [1.203]	
2:15	For just as in affairs of state we see a man’s mettle and the secret sense of his soul and affections better when he is under pressure than at others times, so the secrets of nature betray reveal themselves more through the vexations of art than they do in their usual course. [Quemadmodum enim in Ciuilibus ingenium cuiusque, & occultus animi affectuûmque sensus meliùs elicitur, cùm quis in perturbatione ponitur, quàm aliàs: Simili modo, & occulta Naturæ magis se produnt per vexationes Artium, quàm cum cursu suo meant.]	<i>Novum organum OFB</i> 11.156–157 O1v22–25; <i>SEH</i> 4.95 [1.203]	1620
2:16	Moreover, people are not accustomed in separations of this kind [suspensions such as milk] to have in mind or look out for what we have warned of elsewhere, namely in vexations of bodies, whether by fire or other means, many qualities come from the fire itself and from those bodies used to effect separation, qualities not present in the mixture before; and in this way some very peculiar fallacies have arisen. [Neque illud etiam, quod aliàs monuimus, hominibus in mentem aut obseruationem venire solet in huiusmodi Separationibus: hoc est, plurimas qualitates in Corporum vexationibus tam per ignem quàm alios modos, indi ab ipso Igne, iisque corporibus quæ ad Separationem adhibentur, quæ in Composito priùs non fuerunt: vndè miræ fallaciæ.]	<i>Novum organum OFB</i> 11.356–357 2L2r1–6; <i>SEH</i> 4.199–200 [1.314]	1620
2:17	In short, the vexations of art are indeed like the chains and manacles of <i>Proteus</i> which betray the ultimate strivings and exertions of matter. [Denique Vexationes Artis sunt certè tanquàm Vincula & Manicæ <i>Protei</i> , quæ vltimos Materiæ Nixus & Conatus produnt.]	<i>Parasceve OFB</i> 11.462–463 b3v11–12; <i>SEH</i> 4.257 [1.399]	1620
2:18	At this tyme the King beganne againe to be haunted with sprites: by the Magick and curious Arts of the Lady Margaret; who had raised vp the Ghost of Richard Duke of Yorke (second sonne to King Edward the Fourth), to walke and vex the King.	<i>History of King Henry VII OFB</i> 8.80 56r4–7; <i>SEH</i> 6.132	1622
2:19	There was also enacted that charitable Law for the admission of poore suitors in Forma Pauperis without Fee to Counsellour, Atturney, or Clerke; Whereby poor men, became rather able to vexe than vnable to sue.	<i>History of King Henry VII OFB</i> 8.103 77r28–77v31; <i>SEH</i> 6.161	1622
2:20	But they did all in their preambles much be-moane the Kings	<i>History of King</i>	1622

	case, with a kinde of indignation at his fortune: That a Prince of his high wisdom and vertue, should haue been so long and so oft exercised, and vexed , with Idolles. But <i>the</i> King said; that it was the vexation of God Almighty himselfe to be vexed with Idolles; and therefore that that was not to trouble any of his friends. And that for himselfe he alwayes despised them, but was grieved that they had put his people to such trouble and miserie.	<i>Henry VII OFB</i> 8.129 100v5–12; <i>SEH</i> 6.194	
2:21	They did also vex men with Information of Intrusion vpon scarce colourable Titles.	<i>History of King Henry VII OFB</i> 8.147 117r6–7; <i>SEH</i> 6.218	1622
2:22	Some thought the continuall Rebellions wherewith he had been vexed , had made him grow to hate his People....	<i>History of King Henry VII OFB</i> 8.164 134r20°21; <i>SEH</i> 6.240	1622
2:23	For if the weariness and pain [vexation] of disease make time appear longer than it really is, then the computation of time corrects the error, and makes it appear shorter than had been conceived by the false opinion. [Nam si tædium et vexatio morbi tempus videri longius faciunt quam reuera est, et computatio temporis errorem illum corrigit, et breuius facit quam opinio illa falsa conceperat.]	<i>De augmentis scientiarum</i> <i>SEH</i> 4.471 [1.687]	1623
2:24	For first there ensues vexation and disquiet of mind, seeing all things human are full of treachery and ingratitude. [Primo enim sequitur animi vexatio et inquietudo, cum humana omnia perfidiæ et ingritudinis plena sint.]	<i>De augmentis scientiarum</i> <i>SEH</i> 5.38 [1.752]	1623
2:25 *	13. Terentia, Cicero's wife, lived for 103 years; a woman burdened with sorrows, first by her husband's exile, then by their quarrel, and lastly by his ultimate disaster; she was also a martyr to gout. [13. <i>Terentia Ciceronis Vxor</i> , ad Annum Centesimum tertium vixit; Mulier multis ærumnis conflictata, primò Exilio Mariti, deinde Dissidio, & rursus Calamitate eius extremâ; etiam Podagrâ sæpius vexata .]	<i>Historia vitæ & mortis OFB</i> 12.204–205 13r23–25; <i>SEH</i> 5.248 [2.138]	1623
2:26 *	By contrast, philosophies dealing with vexatious subtleties, given to laying down the law, and reducing or twisting single instances to demands of general principles, and lastly the prickly and narrow ones, are bad; [At contrà, <i>Philosophiæ</i> in Subtilitatum Molestijs versantes, & <i>Pronunciatiuæ</i> , & singula ad Principiorum Trutinam examinantes, & torquentes, denique Spinosiores; & Angustiores, malæ;]	<i>Historia vitæ & mortis OFB</i> 12.232–233 M6v10–M7r13; <i>SEH</i> 5.263 [2.154]	1623
2:27	84. Great dread shortens life; for although both grief and dread distress the spirit, grief nonetheless consists in simple	<i>Historia vitæ & mortis OFB</i>	1623

	contraction, whereas dread causes disquiet and vexation of the spirits. 85. Suppressed rage is also a species of vexation , and causes the spirit to prey on the body's juices. [84. <i>Metus Grauiores</i> vitam abbreviant, licet enim et <i>Mæror</i> , et <i>Metus</i> , <i>Spiritus</i> vterque angustiet; tamen in <i>Mærore</i> est simplex <i>Contractio</i> ; at in <i>Metu</i> , propter <i>Curas</i> de Remedio, et <i>Spes</i> intermistas, fit <i>Æstus</i> , et <i>Vexatio Spirituum</i> . 85. <i>Ira compressa</i> est etiam <i>Vexationis</i> genus; et <i>Spiritus Corporis Succosa</i> carpere facit...]	12.264–265 Q8r29–Q8v34; <i>SEH</i> 5.279 [2.171–172]	
2:28	91... And just as old men are often loquacious to the point of garrulity, so the loquacious very often grow very old: for it indicates idle reflection that that does not greatly distress or vex the spirit. But subtle, acute, and sharp inquiry shortens life; for it wearies the spirit and preys on it. [Atque certè quemadmodum <i>Senes</i> plerūque <i>Garruli</i> , & <i>Loquaces</i> sunt; ita & <i>Loquaces</i> sæpius <i>Senescunt</i> : Indicat enim, <i>Leuem Contemplationem</i> , & quæ <i>Spiritus</i> non magnoperè stringat, aut vexet . At <i>Inquisitio Subtilis</i> , & <i>Acuta</i> & <i>Acris</i> , vitam abbreviat; <i>Spiritus</i> enim lassat, & carpit.]	<i>Historia vitæ & mortis OFB</i> 12.266–267 R1v27–R2r31; <i>SEH</i> 5.280 [2.172–173]	1623
2:29	8. What people use for mortification can be transferred to vivification. For hair shirts and flagellation, and all agitation of the outer parts, strengthens their attractive force. [8. Quæ ad <i>Mortificationem</i> vsurpantur, ad <i>Vivificationem</i> traduci possunt; Nam & <i>Indusia setosa</i> , & <i>Flagellationes</i> , & omnis <i>Exteriorum Vexatio</i> , <i>Vim</i> eorum <i>Attractiuam</i> roborat.]	<i>Historia vitæ & mortis OFB</i> 12.308–309 X8v29–Y1r31; <i>SEH</i> 5.301 [2.194]	1623
2:30	18. I have heard that new wine, recently pressed and practically seething, laid up in a strong and thick glass bottle (with the mouth of the glass well sealed and closed up so that the wine could neither burst out nor break through) has, when the spirit has found no way out, quite turned itself into tartar by uninterrupted circulations and vexations , so that nothing was left in the glass beside breath and dregs... [Audiui, <i>Mustum</i> nuper <i>calcatum</i> , & quasi <i>fervens</i> , in <i>vitro</i> crasso & forti repositum (ore <i>vitri</i> bene lutato & clauso, ut <i>Mustum</i> nec erumpere nec perfringere posset) non reperiente exitum <i>spiritu</i> , se per continuas <i>Circulationes</i> & vexationes vertisse plane in <i>Tartarum</i> ; ut nihil restaret in <i>vitro</i> , præter <i>Auram</i> et <i>Fæces</i> ...]	<i>Historia densi et rari OFB</i> 13.78–79 C2v13–C3r17; <i>SEH</i> 5.357 [2.262]	1623
2:31	9. On the other hand, the chemists observe that the expansion of quicksilver by fire is also extremely violent ; why even gold vexed and shut in sometimes bursts out with fury, endangering the people working with it. [Notant autem <i>Chymistæ</i> , etiam <i>Argenti Vivi</i> expansionem per ignem esse admodum violentam ; quin & <i>Aurum vexatum</i> , & occlusum,	<i>Historia densi et rari OFB</i> 13.120–121 E3v21–E4r23; <i>SEH</i> 5.377–378 [2.282]	1623

	quandoque potenter erumpere, cum periculo operantium.]		
2:32	2. Metals pure and perfect—although they may be vexed and altered as in sublimations, precipitations, amalgamations, dissolutions, calcinations, and the like—are still (the metallic nature not agreeing very well with other bodies) generally restored by fire and melting down, and turn into a body of the kind they were before. [<i>Metalla</i> pura & perfecta, licet variis modis vexentur & alterentur, ut in <i>Sublimationibus</i> , <i>Præcipationibus</i> , <i>Malagmatibus</i> , <i>Dissolutionibus</i> , <i>Calcinationibus</i> , & hujusmodi; tamen (natura <i>metallica</i> cum aliis corporibus non bene conveniente) per Ignem & conflationem plerunque restituuntur, & vertuntur in corpus quale prius.]	<i>Historia densi et rari OFB</i> 13.128–129 E6v6–10; <i>SEH</i> 5.381 [2.286]	1623
2:33	[Regarding the passage of the spirit from the body, e.g. of an egg:] But after the spirit has found a way out for itself and has been given off, then the work of the parts gets the upper hand, parts which, vexed by the spirit conspire and draw themselves in tight—as much from a desire for connection and mutual contact as from hatred of motion and vexation . And it is from this that constriction, hardening and stubbornness come. [Sed postquam <i>spiritus</i> sibi exitum invenerit, & emissus fuerit, tum prævalet opus partium, quæ à <i>spiritu vexatæ</i> conspirant, & se stringunt; tam ex desiderio <i>Nexus</i> , & mutui <i>contactus</i> , quam ex odio <i>Motus</i> & vexationis . Atque inde sequitur <i>Coarctatio</i> , <i>Induratio</i> , <i>Obstinatio</i> .]	<i>Historia densi et rari OFB</i> 13.136–137 F1v9–F2r13; <i>SEH</i> 5.385 [2.289–290]	1623
2:34	And it [a lead globe filled with water] would no longer suffer vexation and compression, but the water in many places came out through the solid metal like a slight drizzle. [Sed ulterior vexata & compressa non tolerabat, sed exhibat Aqua ex multis partibus <i>solidi Metall</i> i, ad modum parvi Imbris.]	<i>Historia densi et rari OFB</i> 13.156–157 G2r32–33; <i>SEH</i> 5.395 [2.300]	1623

Though several of these entries are long-familiar *exempla* in these controversies, some of them are far less well-known; by bringing them forward, these tables already show their usefulness. Throughout, no significant divergence emerges between English and Latin cognate terms, which each share a single spectrum of meanings. Examining these tables confirms that Bacon used the word ‘torture’ or *tortura* in notably different senses and contexts than ‘vexation’ or *vexatio*. In Table 1, ‘torture’ is used mostly with respect to human beings, both as agents and objects; 1:22 and 1:26 extend this to the ‘torture of laws,’ personifying the laws as torturers of men, while 1:7 personifies ‘mathematics’ (in this context, Ramist dichotomies) as

the agent whose ‘method’ tortures learning.¹⁸ Here, ‘torture’ has a strongly negative sense, denoting something cruel and illegitimate.

Though none of the items use ‘torture’ or *tortura* to describe experiments, 1:10 and 1:13 describe the sucking of air from an egg as *tortus*, rendered in *SEH* as ‘extended’ and in *OFB* as ‘racked’ or ‘tormented.’ These intriguing *exempla* were ignored by earlier treatments of the ‘torture of nature,’ showing the advantages of such comprehensive tables. Here difficult decisions about translation enter in; should one prefer the literal sense that the air was extended or twisted (*tortus*) or the metaphorical sense that it was ‘racked’? To resolve this problem, Bacon’s texts direct us to the relation of the ‘nature’ of the air subjected to ‘violence,’ which we will consider in the next section.

The prevalently negative sense of torture even applies to self-torture (1:5), though the ‘accusing, questioning, and torturing of a man’s self’ indicates a noble and sensitive response to the action of tragic poetry. Similarly, 1:9 in its full context indicates that the torture of Prometheus should be understood as purificatory self-torture, integral to his audacious project, rather than punishment inflicted by the gods for wrongdoing. Yet Bacon worries that his new philosophers, ‘the school of Prometheus,’ will ‘torment and wear themselves away with cares and solicitude and inward fears.’ Bacon judges their sufferings a temperamental malady for which he hopes that ‘Hercules; that is, fortitude and constancy of mind,’ will in time bring them relief.¹⁹

¹⁸ Ironically, Ramus also emphasized the use of tables to present his dichotomies; see Walter J. Ong, *Ramus, Method, and the Decay of Dialogue* (Cambridge, Mass.: Harvard Univ. Press, 1983), pp. 30–31, 127–128, 181, and 200–202.

¹⁹ *De sapientia veterum SEH* 6.751–752 [6.674–675]; see Pesic, *Labyrinth*, p. 36, which also discusses Prometheus on 35–37, 39–40, 42, 45, 50, passages that must have escaped Merchant’s attention when she erroneously claimed that ‘Pesic does not embrace the tradition of Prometheus as the bound hero who assists humanity through science and technology’ in Merchant, ‘Violence of Impediments’, 748. I have also treated Prometheus in ‘Desire, Science, and Polity: Francis Bacon’s Account of Eros,’ *Interpretation*, 26 (1999), 333–352. Plato’s dialogues (*Theaetetus* 203a, 181c, and *Sophist* 237b) refer to Attic legal practices of judicial torture called the ‘touchstone’ (βάσανος), referring to the stone (*lapis Lydius*) on which genuine gold supposedly reveals itself by the mark it makes; see Pesic, ‘Wrestling with Proteus’ (cit. ref. 4), 91 n.6. In 1573, Francis and Anthony Bacon received copies of Plato’s works from their tutor at Trinity College, John Whitgift, along with the other major classical texts and commentaries; see Brian Vickers, ‘Bacon and

All Bacon's uses of 'vexation' listed in Table 2 avoid the negative connotations he ascribed to the word 'torture.' 'Vexation' often has for him an inward sense, as in the scriptural phrase 'vexation of spirit' he cites several times (2:6, 2:13, 2:27, 2:28). He tends to use 'vexation' synonymously with 'anxiety of mind' (2:4) or 'disquiet of mind' (2:24) understood as inner tribulation. In Bacon's account of King Henry VII's 'vexation' caused by 'idols' (here meaning pretenders to the throne), the king says 'that it was the vexation of God Almighty himselfe to be vexed with Idolles; and therefore that that was not to trouble any of his friends' (2:20), indicating that 'vexation' was a state that could appropriately apply to God as well as to the king. In contrast, Bacon never writes of 'torture' applied to such exalted beings, implying again that 'vexation' connotes an inherently higher and qualitatively different state than 'torture,' especially with regard to their respective objects.

I agree with Merchant that Bacon's concept of 'vexation' amounts to a 'strong interventionist approach to extracting the secrets of nature'.²⁰ He enjoins the 'Servant of Nature' to bind Proteus, lest this deceptive, multiform deity escape without revealing secrets that seem crucial for human welfare.²¹ Consequently, Bacon advises that matter should be 'by all proper methods vexed' (2:2), even though it may result in explosions or other transformations he calls 'violent' (2:3,

Rhetoric,' in *The Cambridge Companion to Bacon*, ed. Markku Peltonen (Cambridge: Cambridge Univ. Press, 1996), pp. 200-31 (p. 206).

²⁰ Merchant, 'Bacon and the "Vexations of Art"', 555. As Sophie Weeks puts it, 'The centrally important polysemous term "experiment" (*experimentum*) refers in a general sense to intervention in nature'; 'The Role of Mechanics in Francis Bacon's *Great Instauration*', in *Philosophies of Technology*, ed. Claus Zittel, Gisela Engel, Romano Nanni, and Nicole C. Karafyllis (Leiden: Brill, 2008), pp. 133-95, on 135.

²¹ For a sensitive reading of the "binding" of nature, see Sophie Weeks, 'Francis Bacon and the Art-Nature Distinction', *Ambix*, 54 (2007), 101-29. Consider also Bacon's 1594 description of the deceptive physician who plotted to poison the Queen: 'As this *Proteus* of a disguised, and Transformed, *Treason*, did at last, appear, in his own Likenesse, and Colours; which were as Foul, and Monstrous, as have been known, in the world.' (*A true report of the detestable treason intended by Doctor Roderigo Lopez OFB* 1.440 X1v.114-7). For the diversity of views on Proteus as prophet or deceiver, see A. Bartlett Giammati, 'Proteus Unbound: Some Versions of the Sea God in the Renaissance', in *The Disciplines of Criticism*, ed. by Peter Demetz, Thomas Greene, and Lowry Nelson Jr. (New Haven: Yale University Press, 1984), pp. 437-75, and Pesic, 'Shapes of Proteus in Renaissance Art'.

2:8, 2:31), which we will now consider carefully. Yet Bacon's texts do not support those whom she cites as 'interpreting his meaning as "torture" or "torment"', with the odious and violative connotations those words clearly had for him and many others.²²

Contextualising 'Nature' and 'Violence'

Though she now agrees that Bacon himself did not expressly advocate the 'torture of nature,' in her 2009 paper Merchant shifted attention to others of his locutions, judging that, though 'some of Bacon's metaphors, terms, and examples are indeed benign and nonviolent ... as appropriate to his overall goal of mimicking and speeding up nature's processes through art and experiment, but the vast majority of them implied some form of violence toward nature.'²³ Here we are dealing with his actual phraseology, such as this example from *De augmentis scientiarum* (3:125, 1623):

The division which I will make of Natural History is founded upon the state and condition of nature herself. For I find nature in three different states, and subject to three different conditions of existence. She is either free and follows her own course of development as in the heavens, in the animal and vegetable creation, and in the general array of the universe; or she is driven out of her ordinary course by the perverseness, insolence, and frowardness of matter and violence of impediments [*ab impedimentorum violentia*], as in the case of monsters; or lastly she is put in constraint, molded, and made as it were new by art and the hand of man; as in things artificial.

Does his direct mention of 'violence' (*violentia*) substantiate Merchant's claim? Concerning this issue, Katharine Park has remarked that Merchant, 'like some other feminist scholars, has overstated the element of violence in these metaphors, as well

²² Merchant, 'Bacon and the "Vexations of Art"', p. 566. In this latest paper, it is not completely clear where Merchant herself stands, other than that the evidence she has collected seems 'to favour assigning a stronger rather than a milder meaning to *vexare*' (p. 582).

²³ Merchant, 'Violence of Impediments', p. 733 n. 5.

as the degree of consistency with which they are elaborated.’²⁴ Yet the disturbing connotations suggested by Merchant’s phrase ‘violence toward nature’ call for close examination throughout the relevant instances in Tables 2 and 3 (such as 2:8, 2:31).

To that end, we need to consider the particular technical meaning of the term ‘violence’ Bacon knew in the context of natural philosophy, in which *violentia* had a notably different meaning from its ordinary connotations as ‘profanation, infringement, outrage, assault.’²⁵ For instance, Cawdrey’s *Table Alphabeticall* (1604) defines ‘violent’ as ‘forcible, cruell, iniurious’, and ‘violate’ as ‘to transgresse, defile, deflowre, or breake.’²⁶ The same vehement and injurious connotations inform the almost one thousand citations of ‘violent,’ *violentia*, and ‘violence’ in the *LEME* database, likewise in most of the entries in the *OED*. Even so, the specific Aristotelian meaning of the term *violentia* or ‘violence’ in physics does not share the ordinary transgressive sense of this term, as I have discussed in detail elsewhere.²⁷ In Aristotelian physics, a stone thrown upward is said to move ‘violently,’ compared to the ‘natural’ movement downward when it falls freely. Even so, that ‘violent’ motion scarcely outrages or assaults the nature of the stone. In this particular context, the specifically Aristotelian sense of *violentia* outweighs the vastly greater number of common uses of this term or its cognate, ‘violence.’

The distinction between the common and the technical, physical meanings of ‘violence’ emerges clearly in Table 3, whose salient features I will now review. In many of them, we see the common use of this word with the menacing connotation of excessive force (for instance, 3:17, 3:18, 3:21, 3:22, 3:26, 3:27 and many others). These examples tend to concern the metaphorical use of the word ‘violence’ to

²⁴ Katharine Park, ‘Nature in Person: Medieval and Renaissance Allegories and Emblems,’ in *The Moral Authority of Nature*, ed. Lorraine Daston and Fernando Vidal (Chicago: Univ. of Chicago Press, 2004), pp. 50–73, (p. 70).

²⁵ For its Latin synonyms ‘violatio, profanatio,’ see Charles Du Fresne, Sieur Du Cange, *Glossarium mediæ et infimæ Latinitatis* (Graz: Akademische Druck- und Verlagsanstalt, 1954), p. 346.

²⁶ Robert Cawdrey, *A Table Alphabeticall of Hard Usual English Words* (London, 1604), fol. I4v. Available online at <<http://www.library.utoronto.ca/utel/ret/cawdrey/cawdrey0.html>> [accessed 26 April 2014]. Similarly, Thomas Blount, *Glossographia* (London, 1656), defines ‘violent’ as ‘forcible, vehement, boisterous.’

²⁷ Pesic, ‘Bacon, Violence, and Experiment’.

describe a political situation (3:23, 3:26) or an extreme reading of a text (3:17), or a terrifying natural phenomenon, such as a ‘violent’ earthquake (3:21) or wind (3:60).

Beside these common uses of the word, Bacon also makes clear reference to the Aristotelian sense of ‘violence,’ as when he speak of ‘violent motion’ bracketing it with the expression ‘as they call it [*quem vocant*],’ and similar formulations that draw attention to this locution as separate from the ordinary use of the word ‘violence.’ In 3:19 (written in 1604), he explicitly addresses ‘the peculiar manner and discipline of Aristotle and his school’ in their treatment of ‘*Violent Motion, that it is the flight and dispersion of the parts of a thing from pressure, though not visible,*’ on ‘projectiles, as stones, arrows, bullets, and the like,’ noting that this ‘is about the commonest of all motions.’ Thus, he makes clear both his awareness of ‘violent motion’ as a topic of school philosophy at the same time as he critiques its implicit assumption (that the ‘violent’ is unnatural) by his pointed observation of its commonness, hence ‘naturalness’ in that sense. He then goes on to critique the ‘strange supineness and negligence’ of Aristotelian philosophy in this regard, noting that ‘it is no small loss that is entailed by miscarriage in this investigation of the nature and power of this motion; seeing it is of use in infinite ways, and as the life and soul of artillery, engines, and the whole business of mechanics.’²⁸

Bacon’s treatment of this issue remains consistent over twenty years later, as can be seen in the passage from *De augmentis* noted above (3:125, 1623) and others in his *Novum organum* (1620). In that work, Bacon critiques the way Aristotelians ‘very lazily introduce the distinction between natural and violent motion, which is a stock notion if there ever was one, since all violent motion is in reality natural, but with an external efficient setting nature working in a way different from the one it was working in before’ (3:58). Even Bacon’s statement of his alternative view relies on Aristotelian terminology (specifically, the concept ‘efficient,’ which Aristotle identifies as one of the four causes). As Bacon analyzes the concept of violence, he often adduces mechanical examples, such as the recoil of a bent stick (3:63), compressed air or water (3:63, 3:72), exploding gunpowder (3:68), and especially ‘missiles, such as darts, arrows, and cannon balls’ (3:67). Bacon’s own definition of

²⁸ See Sophie Weeks, ‘Bacon and the Art-Nature Distinction’ and ‘The Role of Mechanics in Bacon’s *Great Instauration*’.

‘Mechanical’ motion (3:74) references Democritus’s replacement of ‘violent’ motion with ‘*Percussion*,’ making clear that Bacon is applying this alternative ancient account of ‘violent’ motion to offer a new perspective on the common Aristotelian lore. Even though Democritus’s account of ‘primary motions ranks even beneath run-of-the-mill philosophers,’ Bacon judges that he at least understands the ‘naturalness’ of ‘percussion,’ which Bacon calls ‘nothing other than motion of liberty.’

This ‘certain love of liberty’ (3:77) strikes Bacon as a concept about which ‘very particular inquiry... should be undertaken.’ By reconfiguring ‘violence’ as ‘liberty,’ Bacon also opens the door to its practical application through artfully contrived mechanisms, ‘as in machines and missiles’ (3:75).²⁹ Yet Bacon is also critical of the possible limitations of ‘violent motions [that] do not do much for the nobler transformations and alterations of similar bodies, for those bodies do not obtain any new stable consistency from them, but a transient one which is always struggling to restore itself and break free’ (3:75). Further, ‘no violence and, if it comes to that, no age or stretch of time can reduce any amount or the smallest portion of matter to nothing, but it stays something and occupies some space and (no matter what kind of necessity is imposed upon it) either frees itself by changing its form or its place or (if it is not given this chance) it stays as it is; and things never get to the point of being nothing or nowhere’ (3:73). Still, he judges it interesting to see whether it might be possible to ‘impose a fixed and stable nature on bodies by violent means. For on this principle air could be changed into water by condensations, and many other things of that kind be accomplished. For man is master of violent motions more than of the rest’ (3:75).

These passages help us resolve the meaning of Bacon’s description of an experiment mentioned above, involving making a small hole in an egg, sucking out its substance, then immediately putting the egg under water. He gives four consistent accounts of this experiment in writings of 1611, 1612, 1620, and 1623 (3:37, 3:55, 1:13, 3:107), significant because (outside of the posthumously published *Sylva sylvarum*) he rather rarely describes the actual details of any specific experiments. As noted above, this passage is the only one that uses the

²⁹ See Pesic, ‘Bacon, Violence, and the Motion of Liberty’, 87–90.

loaded term *tortus* (meaning twisting or even, by implication, torture) in the context of his new natural philosophy, explicitly connecting the degree of *tortus* of the air with the greater or less *violence* of the sucking (3:37, *pro violentia majore aut minore exsuctionis*). Further, in one of these descriptions Bacon glosses *tortus* as ‘dilated beyond what was natural to it [1:13, *magis quàm pro Naturâ suâ dilatatus*],’ confirming by the term *natura* that we should read this passage in the Aristotelian context of nature vs. violence; the word *dilatatus* (dilated) also confirms the spatial sense of *tortus* (twisted).³⁰ Having realized that in this context *violencia* is not ‘violent,’ likewise we conclude that the egg-sucking experiment is not ‘torture.’

This example in particular shows the special kind of interpretative help that these tables can provide by marshalling all the relevant instances in such a way that one can readily consult and compare them. In this case, doing so has brought forward test passages that have never before been discussed, as far as I am aware, and that give decisive confirmation to the arguments that Bacon did not advocate the ‘torture of nature.’ Further, these tables have shed new light on how he both alluded to and departed from Aristotle’s concept of ‘violent motion.’ In the future, the systematic use of such tables promises to be a valuable tool for the reading not only of Bacon but of many other authors.

The Tables Turned

Though the tables presented here are sufficiently accurate and complete to serve the desired purpose of giving decisive evidence in these long-standing controversies about Bacon, such ad hoc devices need eventually to be supplemented by far more comprehensive and systematic tools. The advantage of the methods I have used is their simplicity and ready availability to scholars through using the simplest online tools and capabilities. But in the future we can look forward to the completion of the *OFB* and its availability through online tools that could readily generate tables of the sort considered here, as well as more elaborate searches and frequency counts

³⁰ For instance, Bacon notes that ‘no other animal’s hair is so tightly twisted [*tortus*] as wool’ (1:15); see also 1:16, 1:18.

such as Fattori has given for the *Novum organum*.³¹

Based on my limited experience with the digital bricolage I have done to assemble these tables, I claim no expertise to give substantive advice to those who will devise these more powerful tools. Looking at those resources I found helpful (such as *LEME*), it certainly seems that the growing Text Encoding Initiative (TEI) will probably be the most common platform to use, at least in its choice of the Extensible Markup Language (XML) as the vehicle.³² The major difficulty of the TEI is implementing the tags that label the various subunits of the texts as clauses, phrases, etc. Besides being extremely labor-intensive, this labeling involves judgments about syntax, grammar, and phrase structure that will surely be disputable. Accordingly, various TEI projects have chosen subsets of the standard TEI tags to make their own house style. Whatever may eventually be chosen as the structure of an online Francis Bacon Archive, I would recommend it be as editorially neutral (and as simple) as possible, allowing users the greatest freedom and ease in making their own tables. Indeed, I would recommend that the easy generation of such tables be one of the central design features of such a new digital archive (as word lists are easily generated by *LEME*). In the meantime, I hope that the simple efforts recounted here will inspire others to use similar tools to help resolve important philological and philosophical problems. Surely Bacon would have been delighted that the computer, remote descendant of his Great Instauration, can be so usefully enlisted to turn the tables on Bacon himself.

³¹ See ref. 12.

³² See <<http://www.tei-c.org/index.xml>>, which details the current state of the TEI and its standards.