

## The Smoke of War: From Tamburlaine to Henry V

Early in *Tamburlaine Part 1*, Marlowe's protagonist promises that his army's bullets, "[e]nrolde in flames and fiery smouldering mistes", will occupy the heavens (2.3.20). Uniting the technological with the supernatural, Tamburlaine is characterised as a warrior who commands the "compasse of the killing bullet" (2.1.41), with the smoky emissions generated by his ordnance complementing his martial ambitions. As Tamburlaine and his rival Bajazeth compete for discursive and material control of the fictional – and theatrical - air, deploying smoke, flying bullets, and airborne contagion, Marlowe's drama introduces an association between pollution and achievement that Shakespeare would subsequently interrogate in *Henry IV* and *Henry V*. While Shakespearean characters such as Hotspur continue to celebrate the fumes of "smoky war" (*1 Henry IV* 4.1.115), Shakespeare also registers the performative risks of generating environmental pollution: an approach that culminates in *Henry V* when the title protagonist's threats conflate bullets with rotting bodies and render the air itself a poisoned weapon that "choke[s]" the atmosphere (4.3.99-108). Analysing both parts of *Tamburlaine*, *Henry VI Part One*, *1 and 2 Henry IV*, and *Henry V*, this article explores the theatrical associations between staging battle and the weaponised use of airborne pollutants, reflecting on the implications for contemporary dramatic representations of the martial and aerial environment.

Keywords: air; atmosphere; Marlowe; plague; pollution; Shakespeare; theatre; war drama.

### Introduction: Plague, Pollution, and the Early Modern Playhouses<sup>1</sup>

In his 1603 pamphlet *The Wonderfull Yeare*, the playwright Thomas Dekker recalls the "virulent" plague that had recently devastated London, killing "more (by

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<sup>1</sup> I would like to thank the anonymous peer reviewers for their generous and constructive feedback on the original version of this essay.

many) then 40000.” (C3r). Having introduced the “Tragicall Act” of a father forced to bury his son with his own hands (D1r), Dekker encourages his readers to “shift” their attention to the “shoare” of London’s Bankside:

Imagine then that all this while, Death (like a Spanish Leagar, or rather like stalking *Tamburlaine*) hath pitcht his tents, (being nothing but a heape of winding shéetes tackt together) in the sinfully-polluted Suburbes[.] (*Wonderfull* D1r)

In this striking image, Dekker links pollution to plague through an analogy that directly evokes the titular protagonist of Christopher Marlowe’s two-part war drama, *Tamburlaine the Great* (c. 1587). Marlowe’s fictional conqueror provides Dekker with an apt figure for the seemingly unstoppable advance of an epidemic disease, and the active terminology of “stalking” adds a performative resonance: Edward Alleyn, who played Tamburlaine for the Admiral’s Men (Cerasano “Edward Alleyn” 48-50), was known for the powerful physicality that he brought to the role (Cerasano “Tamburlaine” 176-7; Levin 62-3). The effect is consolidated when Dekker echoes another of Marlowe’s dramatic works just a few lines later. Warning his readers that Death and the plague will grant no parley, Dekker reports that “the Allarum is strucke vp, the *Toxin* ringes out for life, and no voice heard but *Tue, Tue, Kill, Kill*” (*Wonderfull* D1r). In Marlowe’s *The Massacre at Paris* (c. 1593), an outbreak of anti-Protestant violence is similarly heralded by a “peale of ordinance” and ringing bells (4.34; 4.36-7), while the murderous Catholic leader Guise exhorts his companions with cries of “*Tue, tue, tue*” (7.1). The extra theatrical allusion complements Dekker’s previous comparison between Death and a “Spanish Leager” (*Wonderfull* D1r), since Marlowe’s *Massacre* also stresses Guise’s historical alliance with the Spanish-led Catholic League (2.60-5). Dekker’s notion of Death as a “Spanish Leaguer” might further recall the anonymous war drama *A Larum for London* (c. 1599), which depicts the 1576 sack of Antwerp by

Spanish forces, and which had recently been staged by the Lord Chamberlain's Men (Wiggins 118-21).

By aligning the outbreak of plague with early modern war drama, Dekker implicitly responds to contemporary suspicions about the theatre's role in transmitting figurative and material contagion. Comparing the plague to an invading army, Dekker describes the disease's ready conquest of the "sinfully-polluted Suburbs" (D1r); physically vulnerable to occupation by besieging forces, the city's marginal regions prove equally susceptible to moral and medical contamination. This implied convergence between sin and infection is common in early modern discourse. The physician William Bullein identifies "plague" and "pestilence" as divine calls to repentance (*Bulwark* A5r-A7r), including prayer in his 1558 catalogue of remedies against the plague (*Gouernment* H2r); Thomas Nashe characterised the London plague epidemic of 1593 as God's judgement, citing Psalms 9.16 (*Christs Teares* A1r); and the physician-playwright Thomas Lodge begins his 1603 *Treatise of the Plague* with a prayer to "Almightie God" (B1v), who is said to have induced the aerial contagion that is the immediate, material source of the plague (B2v-3r). Dekker, who identifies the plague with non-Protestant characters and religious nonconformity (*Wonderfull* D1r), similarly acknowledges the concurrent significance of London's notoriously poor air quality. After a tongue-in-cheek warning about the dangers of bad poetry and a "leaprous line" (C2r), Dekker describes how "the aire of *London*" has been poisoned by the prevailing epidemic (D4v; C3v). If God's "arrowes of pestilence" are the plague's ultimate source (D2v), the reported reactions of London's citizens reflect its contemporary association with miasma (foul-smelling air). Thus, Dekker notes, people sought to protect themselves by carrying scented herbs (D2r-D2v); by "barricadoing their doores and windows" against the external air (F2v); and even, in extremity, by

pinching their nostrils shut (F3v). Indeed, Dekker's specific attention to the "sinfully-polluted Suburbes" (D1r) might resonate with such efforts: during this period of air-polluting urban expansion, the stews' reputation for encouraging immorality was matched by its materially noxious atmosphere (Cavert 203; Stow Y5r).

Mirroring the convergence of moral and material understandings of disease, Dekker's slippages between pollution, infection, and contagion are characteristic of early modern discourse. In early modern England, the noun "pollution" could refer "simultaneously to spiritual and material conditions, to 'sin' as well as to 'uncleanness' in its physical or environmental dimension" (Boehrer 32). As Dekker's 1603 pamphlet recognises, such associations were of immediate and pressing concern for the early modern theatre. Elizabethan playhouses and their dramatic fictions were regularly denounced by anti-theatricalists and the London authorities as a source of both spiritual and bodily contagion (Gosson B7v-B8v; Northbrooke K3r; Mullaney 8), and the amphitheatres of the adult companies were typically situated in the very "sinfully-polluted Suburbes" that Dekker imagines being conquered by the plague. Elsewhere in Dekker's writings, such pollution is explicitly associated with the South Bank's brothels: *Newes from Hell* (1606) describes the pox lying in the "Suburbes" as "deaths Legyer" (D2v), while *Lanthorne and Candle-light* (1608) identifies "the infection of the suburbs" with the local "Whore-house[s]" (H3r-J1v; H3v; see also Boehrer 22-5). Similarly, in *The Honest Whore Part 2* (c. 1605), Dekker exploits the conventional early modern association between sexual incontinence and "stinking breath" to characterise his fictional "Bawde" as a source of airborne contagion (H3r; I1r). In the earlier *Wonderfull Yeare*, however, Dekker implies that the playhouses are as much to blame for such plague-inducing pollution as the "Suburbe Curtizans" (*Dead Tearme* C3r) – and perhaps even more so. His 1603 tract mentions London's "bawdy-houses" in

passing (*Wonderfull* F1r), but devotes little overall attention to the “Suburbe-houses of [sexual] iniquity” (*Dead Tearme* A1v). Instead, the shadowy presence of the theatre that Dekker wrote for haunts his prose “Tragedy” (*Wonderfull* E1r). The theatrical allusions cluster most thickly when Dekker moves from reporting Elizabeth I’s death and James I’s accession to describing the “most dreadfull plague” that will “shut vp the yeare” (C1r). References to contemporary plays implicitly link the early modern amphitheatres to the plague’s entrance into London (D1r), and his text’s plague victims will subsequently compare themselves to well-known dramatic characters (E4r). Yet, crucially, Dekker does not mention those works (such as *The Honest Whore*) that would most readily evoke the nearby brothels, or even the “bawdy” theatre’s own reputation for purported sexual immorality (see Stubbes, L7v-L8v). Instead, the early modern theatre’s aerielly contagious effect is primarily associated with war drama and, subsequently, the “staring ghost[s]” of an equally martial revenge tragedy (E1r).

Dekker’s latter comparison of a “sick Londoner” to the tragic spectre that “exclaimd vpon *Rhadamanth*’ (E1r) probably references Thomas Kyd’s popular *Spanish Tragedy* (c. 1587); the Ghost of Andrea, who has recently been killed in battle, opens this play by describing his journey to the underworld and encounter with “Minos, Aeacus, and Rhadamanth” (1.1.33). The analogy enables Dekker to simultaneously evoke the contemporary theatre’s fictional spirits, whose stage appearances were accompanied by clouds of foul smoke (Mazzio 185), and the prevalent cultural association between ghostly manifestations and the “noysome stench” of the decaying dead (C3v). He exploits the latter link again in his 1608 pamphlet *The Dead Tearme*, in which the plague (“Sickness”) is said to walk London’s streets in “ghostly [...] shape”, filling the city with a “pestilent vapour” (*Dead Tearme* G1r-G1v). In *The Wonderfull Yeare*, however, dramatic fiction is itself implicated in the production of such “pestilent

vapour". Dekker's 1603 attention to the playhouse's "tragick fumes" as a source of contagion (*Mucedorus* A3r) importantly complements his allusions to the "corrupted aire" that is the plague's presumed material cause (Lodge B2v). His theatrical analogies further extend this effect, introducing plays that reference the figurative and material origins of airborne pollution. In Marlowe's *Massacre*, for instance, the French Catholic murderers worry that the body of the "heretick" French Protestant leader Coligny "will infect [...] the aire, and so we shall be poisoned with him" (11.2-4). Conversely, in *A Larum for London*, the Spanish soldier Danila (representing the historical commander Sancho D'Avila) gloatingly anticipates that the cannon-fire directed against Antwerp will "vomit horred plagues" upon the city's Protestant burghers (*Larum* B1r).

Such associations between gunpowder-powered martial action, war drama, and contagion are even more pertinent to Marlowe's earlier *Tamburlaine* plays. As this article will demonstrate, Marlowe's late Elizabethan war drama importantly pre-empted Dekker's 1603 connection between staged military conquest, air quality, and the plague. The rival warlords of *Tamburlaine* aspire to control not only the ground, but the very air they breathe. In the process, the theatrical atmosphere becomes a space of martial contestation, and characters from Bajazeth to Tamburlaine invoke smoky pollution and airborne contagion as weapons in their struggle. Complementing this drama's focus on conquering words (see *Part 1* 1.2.228-9), the projected weaponisation of the air even includes the deliberate, deadly deployment of plague. Dekker's reference to "*Tamberlaine*" as the deadly commander of the plague's figurative army may reflect his familiarity with Marlowe's intriguing approach, as he too elides the categories of plague and pollution. Moreover, his text indicates that contemporary audiences would have recognised the potential overlaps between moral and material contagion - and between poor air quality and the plague - that Marlowe's drama vividly exploits. Marlowe's

depiction of such themes significantly influenced Shakespeare's late Elizabethan war drama. I argue that Shakespeare consolidates and extends Marlowe's attention to gunpowder-powered weapons and air pollution in *1* and *2 Henry IV*, while *Henry V* provocatively depicts a Christian English king wielding the plague as a weapon against his enemies – and their atmosphere.

Marlowe and Shakespeare shared a keen interest in the relationship between air quality and martial drama, self-consciously interrogating the environmental impact of staging war in the “sinfully-polluted” and plague-ridden environs of London's suburbs. Yet, while recent scholarship has been increasingly attentive to the acoustic and olfactory experience of sixteenth- and seventeenth-century playgoers (Dugan; Harris; Jones; Smith; Sanders), and even the theatrical and environmental significance of the actors' breath (Bloom; Mazzio; Paster; Sale), the eco-dramatic implications of such insights have still to be fully explored. Recent ecocritical studies of early modern literature have ably demonstrated the extent to which Shakespeare in particular addressed questions of tangible environmental significance in his plays (Boehrer; Borlik; Egan; Hiltner; Martin; Watson), illuminating aspects such as the treatment of non-human animals, agricultural practice and food supply, and the deforestation of woodlands. For such studies, however, it is the earth and its resources that are the critical focus. Air pollution and the weather might be mentioned (see for example Egan 132-71), but these themes are rarely central. There are a few important exceptions: for instance, Todd Borlik thoughtfully evaluates the literary discourse of coal-smoke pollution in *Ecocriticism and Early Modern English Literature* (esp. 159-63); Ken Hiltner's *What Else Is Pastoral?* includes a detailed analysis of how air pollution is represented in seventeenth-century pastoral works (esp. 96-123); and Bruce Boehrer perceptively discusses the convergence of material and moral contagion in Thomas

Middleton's *The Triumphs of Truth* (31-4). In these instances, though, the authors are primarily interested in poetic works and pageants, almost all dating from the seventeenth century. In contrast, the representation of air pollution on the early modern stage has received little attention. By uniting research into historical attitudes to air quality (Brimblecombe; Cavert) with new work on the performative impact of early modern drama, this article aims to demonstrate the extent to which Elizabethan dramatists engaged not only with the tangible, physical features of the natural world, but also with the air around them. Through analysing the significance of airborne pollution in the war drama of Marlowe and Shakespeare, I suggest that to fully appreciate the atmospheric, environmental, and theatrical force of early modern drama, we need to attend not only to its sights and sounds - but also to its air.

Questions of air quality and atmospheric control are central to the way in which Marlowe and Shakespeare negotiated the theatrical representation of military conflict. In their late Elizabethan war drama, these playwrights jointly identify the staging of battle with a form of aerial expansion that ultimately threatens to pollute the playhouse atmosphere: both physically, through the clouds of smoke generated by firing ordnance onstage; and figuratively, to an extent that hints at an underlying concern about the imperceptible consequences of depicting warfare on the early modern stage. Whereas Marlowe's protagonists imply that airborne pollution might become a desirable source of martial and theatrical power, however, Shakespeare's plays more cautiously interrogate the implications of such contagious emissions. With the fumes from onstage gunfire or offstage squibs "discolouring and defacing" the "rich furniture of their houses, as also of their costlie and gorgeous apparel" (Plat B4r), war drama was an expensive investment despite its commercial popularity (Cartelli 16; 67-71). As a sharer in the Lord Chamberlain's Men, Shakespeare was more personally affected than



Marlowe by the practical and financial toll that each staged conflict would have taken on the company's material assets. Yet Shakespeare, like Marlowe, is also alert to the less tangible dangers of martial contagion. His figuring of battle hints that, in materially realising the contemporary theatre's reputation for generating pollution, such performances might simultaneously transmit the demonic immorality that its overreaching characters – and the sulphur-tinged fumes of their ordnance - symbolically evoke. While Marlowe almost delights in such consequences, implicitly aligning the tangible, pervasive impact of staged conflict with the expansive force of his imaginative fiction, Shakespeare's English war plays anxiously probe the risks of employing such polluting tactics too close to home. Nonetheless, Shakespeare's culminating response to Marlowe's Asian history implies that compromise may be necessary in commercial rivalry, as in war; for all the associations he draws between martial pollution and sin, his fictional Henry V still envisages using both sulphurous smoke and the stench of putrefying corpses as offensive weapons against the French.

### **Smoke and Mirrors: Representing War on the Early Modern Stage**

In representing martial pollution on the early modern stage, Marlowe and Shakespeare were responding to wider contemporary debates about gunpowder-powered warfare. As J. R. Hale has demonstrated, the increasing use of guns and large ordnance on the early modern battlefield was regarded with considerable ambivalence (391). Gunpowder and its smoky, sulphuric emissions were traditionally associated with devils, and with hell (Hale 391; Hiltner 102-5): Marlowe's Tamburlaine perhaps references this tradition when he asserts that "[I]legions of Spirits" will guide his bullets to their intended targets (*Part I* 3.3.156). In suggestive contrast to this imagined

supernatural accuracy, various contemporary commentators held that guns were too indiscriminate in their effect to be either chivalrous or morally acceptable (Hale 394). Randall Martin notes that Shakespeare, perhaps influenced by such claims, stresses “gunpowder’s fearfully inescapable damage” in *King John* (c. 1596) and *Henry V* (82). That threat is viscerally realised in the probable Marlowe-Nashe-Shakespeare collaboration *Henry VI Part One* (1592), in which the onstage shooting of “chambers” is followed by Talbot’s appalled catalogue of Salisbury’s physical injuries: “One of thy eyes and thy cheek’s side struck off?” (1.6.47 SD; 1.6.53).<sup>2</sup> Early modern writers were equally alert to the sulphur-emitting technology’s deadly atmospheric impact. As the French surgeon Ambrose Paré points out, a gunpowder-induced explosion is first and foremost an “agitation of the aire” (F1v), comparable in its effect to “infernal” “Thunder” (B3r) or an earthquake (F1v). Although Paré seeks to discredit the popular belief that shot was itself venomous (D2v-D3v; cf. Clowes Dd4v), his admission that thunder’s “infectious stinke” can be “Pestilentiall” (E2v-E3r) acknowledges that such associations came readily to contemporaries used to regarding noxious air as a source of contagion. Moreover, Paré figuratively (if not materially) identifies gunpowder’s emissions with the airborne plague, lamenting that “the tempest [...] of Artillery” is now “dispersed as a contagious pestilence ouer all the earth” (B4r; see Hale, 398-9).

Early modern drama exploited such figurative associations between the foul-smelling fumes of gunpowder-powered ordnance and plague-bearing miasma. Moreover, as Dekker’s comparison of a plague victim to Kyd’s soldier-ghost Andrea registers (*Wonderfull* E1r), contemporary plays often evoke the contagious presence of

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<sup>2</sup> Although the editors of the *Oxford Shakespeare: Complete Works* tentatively attribute Act 1 to Nashe, Santiago Segarra, Mark Eisen, Gabriel Egan, and Alejandro Ribeiro argue elsewhere that 1.6 is ‘distinctly Marlovian’ (246). In the *New Oxford Shakespeare* (2016), *Henry VI Part One* is identified as a collaboration between Marlowe, Nashe, and an anonymous third author, which was then adapted by Shakespeare.

the fictional dead - whether through dialogue, or by bringing ghost characters onstage. In plays that stage the death of soldiers in battle, such themes converge, with the dying breath of those killed by gunfire or explosions further tainting the imagined atmosphere of “smoky war” (*1 Henry IV* 4.1.115). Thus, although it was not until the mid-seventeenth century that contemporaries actively denounced smoke pollution’s detrimental impact on human health (see Hiltner 11), Elizabethan audiences could have readily recognised gunpowder-powered warfare’s negative impact on the aerial environment - and, by extension, its prospective ties to airborne contagion. Indeed, Dekker’s figuring of Tamburlaine as the plague’s commander perhaps owes as much to the perceived atmospheric impact of war drama as it does to the theatre’s reputation for immorality or the conquering force of Marlowe’s protagonist.

Marlowe and Shakespeare regularly utilise descriptive dialogue to evoke fictional conflict. Analysing the comparable stage representation of darkness or mist, Alan Dessen notes that “the actors provided the signals and the audience cooperated”, sustaining the verbally-cued illusion through “imaginative participation” (106). These performance conventions also applied to the staging of warfare, as Shakespeare’s Prologue to *Henry V* famously acknowledges: “Piece out our imperfections with your thoughts. / Into a thousand parts divide one man / And make imaginary puissance” (0.23-5). Despite the latter passage’s deprecating tone, Dessen has persuasively demonstrated that early modern dramatists were able to exploit non-verisimilar representation to great symbolic effect (esp. 110-6). There are numerous dialogue allusions to the use of gunpowder-powered weapons and the resulting martial, environmental pollution in Marlowe and Shakespeare’s late Elizabethan war drama, which similarly exploit prevalent figurative associations between guns and pollution. In such instances, however, it is likely that the verbal cuing of battle was importantly

complemented by materially-perceptible effects that recreated the sounds, sights, and even smells of battle on the early modern stage.

Whereas the anti-Protestant violence of the *Massacre* is primarily enacted with swords and daggers (with the exception of the initial attack on Coligny), Marlowe's *Tamburlaine* plays and Shakespeare's *Henry V* provide significant opportunities for gunpowder-powered weapons to be used onstage. Hand-held firearms, cannons, and other ordnance were routinely used by Elizabethan companies, and Nick de Somogyi suggests that Philip Henslowe did not distinguish between the military props used onstage at the Rose and the weapons he purchased for London's trained militia bands (106). The possibility that such firearms were used interchangeably is strengthened by Philip Gawdy's 1587 report of a playhouse firearms accident in which a woman and child were killed (22-4): an incident that is often identified with the shooting of the Governor of Babylon in *Tamburlaine Part 2* (Edelman 79). Analysing Gawdy's account, Charles Edelman concludes that, while the guns used by early modern actors were usually loaded only with gunpowder and wadding, the broken-off tip of a scouring rod acted as an unintended projectile on this occasion (78-81) - indicating that the weapons used onstage were probably identical to those employed in battle. Such performance mishaps may not have been uncommon. Paul A. Jorgensen has for instance drawn attention to a 1574 proclamation that denounced the "sundry slaughters and mayhemminge of the Quenes Subjects" caused by the "engynes, weapons and powders used in plaies" (qtd. in Jorgensen 2).

While shocking, such incidents were the result of human error or equipment malfunction, rather than the expected consequence of attending a theatrical production. The same cannot be said of the smoke generated by the firing of such weapons. As Jonathan Gil Harris argues in "The Smell of *Macbeth*", the use of gunpowder on the

early modern stage would have generated noxious clouds of smoke within the playhouse. Discussing some of the recipes for explosives that feature in Peter Whithorne's 1573 military treatise, *Certaine Wayes for the Ordering of Souldiours*, Harris notes that firework squibs, which were made from a combination of "foul-smelling ingredients - sulfurous brimstone, coal, and saltpetre", were especially notorious for their odour (Harris 466). Firing artillery onstage would have produced a similar olfactory effect, since comparable ingredients were used to manufacture other forms of gunpowder (Whithorne H3r-H3v).

The resulting sensory impact on early modern playgoers presumably contributed to the widespread identification of the playhouses with bad smells, potentially reinforcing associations between the playhouses and the plague (see Dugan esp. 97-110). Since the sulphurous smoke generated by fireworks and gunpowder-powered weapons retained its medieval associations with demonic manifestations in early modern England, the odour of the playhouses implied a spiritual as well as physical danger (Harris 476). Sixteenth- and seventeenth-century commentators were also more alert to the material dangers of air pollution than has previously been recognised (Cavert esp. 43-79). Sir Hugh Plat, for example, denounced London's sea-coal fires for polluting "this most honorable Citie and the suburbes therof" with "a hellishe smoke" of "smootie substance & subtile atomies" (B4v). As Plat's comments reflect, the increased domestic consumption of bituminous coal during Elizabeth I's reign resulted in strikingly elevated levels of poisonous sulphur dioxide within the city's aerial environment, and a resulting atmospheric haze that reduced local visibility (Cavert xvi). Atmospheric chemists Peter Brimblecombe and Carlotta Grossi have estimated that, from a medieval-era baseline of 5–7 micrograms per cubic metre, SO<sup>2</sup> concentrations increased to approximately 20 micrograms/m<sup>3</sup> by 1575, rising to around 40

micrograms/m<sup>3</sup> by 1625 (Brimblecombe and Grossi 1355). Although air pollution would have been an everyday reality of urban life, the semi-enclosed Elizabethan amphitheatres presumably retained smoke as well as sound during performances, magnifying the sensory impact of the fumes generated by the firing of cannon and artillery onstage. For Marlowe and Shakespeare's audiences, then, the performative impact of *Tamburlaine* and *Henry V* would have registered in acoustic, visual, and olfactory terms, immersing those sitting or standing within the early modern playhouse in a materially and perceptibly polluted aerial environment. Marlowe and Shakespeare's allusions to weaponised air would have been importantly echoed in the performative impact of their war drama, with the smoky emissions of fired guns and cannon complementing their imagery of atmospheric pollution and airborne contagion.

### **The Compass of Killing Bullets: Performing Marlowe's *Tamburlaine***

With a particle mass of approximately 64 grams per mole, sulphur dioxide is not the fastest-diffusing gas. However, its sensory impact on early modern playgoers is reflected in the sixteenth- and seventeenth-century works that refer to the olfactory pervasiveness of squibs (Harris 466). This effect would have been especially pronounced at the Rose, where Marlowe's *Tamburlaine* plays were probably first performed. Based on the calculating method that Bruce R. Smith employs in *The Acoustic World of Early Modern England* (1999), the evidence found during the 1989 excavations of the Rose's foundations suggests that the Elizabethan playhouse had an interior volume of approximately 53,756 cubic feet (radius 23.5 ft x height 31 ft x pi); in contrast, Smith concludes that the Globe had an interior volume of 243,714 cubic feet (210). While the rate at which smoke diffused throughout the playhouse would have

varied between performances, depending on the daily atmospheric conditions, it seems highly likely that audiences at the Rose would be readily engulfed by the sulphurous smoke that would have accompanied a performance of *Tamburlaine the Great*.

The amount of smoke that would have been generated by the staging of *Tamburlaine Part 1* or *Part 2* depends significantly on the extent to which the drama's many episodes of battle were enacted onstage. The directions printed in the 1590 edition of *Tamburlaine the Great* suggest that encounters between opposing forces were probably represented through a combination of offstage sound-effects and onstage "duels" - unsurprisingly, given the small area of the stage platform (Gurr *Shakespeare's Opposites* 125-7). The actor playing Cosroe is for instance said to "enter [...] wounded" following his combat with Tamburlaine in *Part 1* (Marlowe *Tamburlaine the Great* C1r), suggesting that the fight was not performed in its entirety onstage, and the later conflict between Bajazeth and Tamburlaine is conveyed by combining Zabina and Zenocrate's onstage commentary with offstage sound effects (C8v-D1v). Nonetheless, actors are expected to enter "to the Battel" on five occasions across the two plays (B6r, B6v, C1r, D1r, E8r). If such directions imply that the Admiral's Men relied primarily on symbolic rather than would-be realistic action in staging *Tamburlaine*, the dynamic effect produced by having players run off the stage to battle and enter to declare victory still intriguingly expands the space of the dramatic fiction (Woods n. pag.); this approach relies on indirectly aerial aspects to impress the audience, who might feel the wind of the actors' swift passing and hear their panting breaths. Since squibs or ordnance were often used to acoustically simulate a pitched battle, the entering players might well have been accompanied by clouds of noxious smoke even if no guns were discharged onstage. In total, the 1590 edition of *Tamburlaine the Great* contains fourteen references to sound effects that would create what Smith terms a "combat"

soundscape. Although there is no specific reference to ordnance in the printed play-text, Smith suggests that the noise of firearms was a common feature of the theatre's combat soundscapes, which ran "the gamut from the trumpet's keening to the drum's riot of multiple pitches to the ordnance's chaos of noise" (244). Live gunfire might also have been used in simulating the signalled "*Battel[s]*", as in the near-contemporary *1 Henry VI Part One* (1.6.47 SD) or Dekker's later *Whore of Babylon* (c. 1606; K3r).

It seems probable that offstage (and possibly onstage) gunpowder technology was used to simulate Tamburlaine's martial encounters in *Part 1. Tamburlaine Part 2* additionally contains two specific directions for the onstage shooting of firearms (*Tamburlaine the Great* K4v). This striking onstage use of hand-held calivers must have contributed importantly to the acoustic and olfactory impact of Marlowe's play. *Part 2* also includes three separate references to the firing of buildings, bodies, and books (*Tamburlaine the Great* H2r, H6v, K5r). To use actual flames would have been a dangerous undertaking on a wooden stage – but, as Lawrence Manley points out, "we cannot apply our own notions of risk and liability to a period in which theatregoers apparently brought their own fires with them to the theatre in cold seasons" (116). The 1590 edition's directions call for a visual representation of "*the Towne burning*" to accompany Tamburlaine's verbal description of Larissa's destruction (H2r), and Olympia's dialogue with Theridamis evokes the "burning flame" of her husband's pyre as an immediate presence (*Part 2* 3.4.71). The phrasing of Tamburlaine's command that his general "fling" the "supersticious bookes" of "Mahomet" "in the fire", may again imply a performed action (*Part 2* 5.1.186; 5.1.174-5). Manley, who characterises the repertory of Lord Strange's Men as "remarkably pyrotechnical" (116), believes that the Rose may even have possessed "a removable stage device [...] which could serve as a scaffold for dangerous pyrotechnical effects" (qtd. in Wilson "Arson" 9). In the absence



of the latter, smoke from a trapdoor might have been used to create the desired effect, if the stage possessed this facility; squibs, whose use is often signalled in stage directions, are another plausible alternative. In such passages, smoke emissions become a pervasive imaginative – and perhaps material – presence for Marlowe’s audiences.

In early modern performances of *Tamburlaine Part 1* and *Part 2*, the probable use of at least some smoke-generating staging effects would have complemented by the extensive verbal references to atmospheric conditions. Having brought the audience within the “stately tent of war” (Prologue 2-5), *Tamburlaine Part 1* demonstrates that the protagonist’s thunderous rhetoric is matched by the environmental impact of his army. After abducting the Egyptian princess Zenocrate, Marlowe’s shepherd-warrior boasts that, though his followers may “seeme but silly country Swaines”, this military force will swell to “so great an host” that “their waight shall make the mountains quake, / Even as when windy exhalations, / Fighting for passage, tilt within the earth” (1.2.47-51). This notion of his army as an earthquake, a “wind-powered” phenomenon disrupting the balance of the world (see Jones 97-8), is extended when, in allying with Cosroe, Tamburlaine defines what the latter characterises as the “compasse of the killing bullet” (2.1.41). Anticipating Cosroe’s imagining of his sword as a “winged” projectile weapon (2.3.51), Tamburlaine describes how the flaming bullets fired by his army will “mist” and “dim” the sky, in a fantasy of atmospheric occupation:

Our quivering Lances shaking in the aire,  
And bullets like *Joves* dreadfull Thunderbolts,  
Enrolde in flames and fiery smoldering mistes,  
Shall threat the Gods more than Cyclopien warres,  
And with our Sun-bright armour as we march,  
Weel chase the Stars from heaven, and dim their eies  
That stand and muse at our admyred armes. (2.3.18-24)

While critics including Stephen Greenblatt, Emily Bartels, and Garrett Sullivan have long stressed the spatially-expansive nature of Tamburlaine's imagination, it is notable that Tamburlaine's ambitions are not bounded even by the physical co-ordinates of the cartographic mode. Rather, he envisages a pervasive yet diffuse expansion that recalls classical and early modern theories of the imagination's material – and airborne - power to “spred and swell unmeasurably” (Plutarch B4r; see also Montaigne E2v-E5r). Any smoke generated in performance would add to this effect, since SO<sup>2</sup> is especially associated with atmospheric haze, inducing a discernible dimming of visibility to complement Tamburlaine's words. Even by itself, the figurative imagery would be enough to underscore an emphatic association between Tamburlaine's air-threatening weapons and his conquering might. Indeed, Dekker might again have been thinking of Marlowe's late Elizabethan protagonist when, in his 1616 poem *The Artillery Garden*, he celebrates cannon-fire's quasi-divine effect on the aerial and physical environment: “Like *Ioues* one musick, wheron when he striks, / Cloudes dance in tempests, and the poore earth shriks” (39-40).

Tamburlaine returns to the association between ordnance and atmospheric control before his army's decisive confrontation with the forces of the Ottoman Empire. Boasting to Bajazeth that “[l]egions of Spirits fleeting in the aire, / Direct our Bullets” (*Part 1* 3.3.156-7), Marlowe's protagonist again locates victory in his ability to command the aerial space above the field of battle. He subsequently extends this emphasis by reporting his victory over Bajazeth in meteorological terms:

My sword stroke fire from his coat of steele,  
Even in *Bythinia*, when I took this Turke:  
As when a fiery exhalation  
Wrapt in the bowels of a freezing cloude,  
Fighting for passage, makes the Welkin cracke,  
And casts a flash of lightning to the earth.  
But ere I march to wealthy *Persea*,

Or leave *Damascus* and th'Egyptian fields,  
As was the fame of *Clymens* brain-sicke sonne,  
That almost brent the Axeltree of heaven,  
So shall our swords, our lances and our shot,  
Fill all the aire with fiery meteors.  
Then when the Sky shal waxe as red as blood,  
It shall be said, I made it red my selfe,  
To make me think of nought but blood and war. (*Part 1* 4.2.41-55)

In this passage Tamburlaine, having characterised himself as a scourge of God (4.2.30-2), begins by likening his triumph to an implicitly providential meteorological phenomenon. In the Greco-Roman pantheon, power over lightning was an attribute of the chief deity Zeus or Jupiter. Early modern Christians might view a severe storm as a potential manifestation of God's divine will (Walsham 339-45), while, on the early modern stage, thunder and lightning was often identified with demonic manifestations (Jones 10). As Tamburlaine continues, however, the immediate cause of this imagined storm is traced not to another's supernatural manipulation, but to the atmospheric impact of his own army's weapons. With "shot" taking on the force of "fiery meteors", during a period when comet sightings might herald the death of a ruler or an outbreak of plague (Fulke B7v-B8r), it is Marlowe's protagonist who claims the air-altering power conventionally attributed to God or the devil. Moreover, he does so in terms that may implicitly acknowledge the early modern theatre's reputation for transmitting spiritual and physical contagion. I have already mentioned Paré's figurative conflation of gunpowder's atmospheric impact with thunder's "Pestilentiall" stink (E2v-E3r), and Marlowe's imagery may have activated regular playgoers' memories of prior performances in which theatrical storms had literally generated the same sulphuric fumes as staged gunfire (Jones 37). Such noxious smoke, with its symbolic and medical connotations of supernatural and bodily contagion, would complement Tamburlaine's

fantasy of heaven-clouding atmospheric occupation figuratively - and perhaps even materially, if smoke-emitting squibs or gunfire were used to simulate the prior conflict.

The implications of Tamburlaine's speech are provocative. His reference to aerial "Legions" might evoke either God's "legions of Angels" or Satan's "Legion" of "many devils" (Matthew 26.53; Luke 8.30), while his imagined ascension into the heavens relies on a technology whose invention was often blamed on either the devil or "misbelieving Turks" (Hale 391-3; Marlowe *Jew of Malta* 2.2.46). Within the dramatic fiction of *Tamburlaine*, however, the protagonist's imagery most directly acts to counter Bajazeth's prior claims of atmospheric authority. When Bajazeth is first introduced in Marlowe's play, his own capacity to pollute the aerial environment is invoked as an attribute of imperial might. Reassuring the Ottoman emperor that Tamburlaine cannot rival his power, Bajazeth's tributary king Morocco describes how the former's forces command the air, artificially "smothering" seasonal change around the besieged city of Constantinople by keeping both rain and sun from the earth. Bajazeth, agreeing, adds that "all the trees are blasted with our breathes." (3.1.50-5). Following his defeat and imprisonment by Tamburlaine, the deposed emperor continues to deploy pollution imagery against his opponent. While Bajazeth's appeal to the heavens to "sucke up poison from the moorish Fens / And poure it in this glorious Tyrants throat." (4.2.6-7) remains unanswered, his imagery may recall the early modern theatre's contemporary implication in the material transmission of airborne contagion. As Robert Burton notes in his *Anatomy of Melancholy*, "thicke, cloudy, misty, foggy Ayre, or such as come from fennes, Moorish grounds" – and London's Bankside suburbs - was considered especially dangerous in spreading infection (G7r).

Later, Marlowe's "Moorish" antagonist fantasises about Tamburlaine's projected dissolution through air-powered means ("Moor" *OED* n.<sup>2</sup> 2):

Volleyes of shot pierce through thy charmed Skin,  
And every bullet dipt in poisoned drugs,  
Or roaring Cannons sever all thy joints,  
Making thee mount as high as Eagles soare. (*Part 1* 5.1.221-4).

At one level, the threat is explicitly medical. Some contemporary physicians held that gunpowder-fired projectiles poisoned the wounds that they inflicted (Cahill 21), while others believed that bullets could be deliberately coated in poison (Du Chesne B4r-C2r). Bajazath further longs to turn gunpowder's full physical and atmospheric force against an opponent whose "woorking woordes" are complemented by his ordnance (2.3.25), fantasising about a mock-execution in which the very air will dismember this Scythian rebel. Yet the fallen emperor's comparison between Tamburlaine's anticipated destruction and the eagle's flight (a conventional motif for over-reaching ambition) indicates that the material and figurative again converge in this passage; Bajazeth calls for a physical explosion that will parodically continue his captor's "mounting" atmospheric trajectory even as it halts his earthly progress.

Bajazeth consistently seeks to weaponise airborne pollutants, whether to starve a besieged city of resources or send a plague against his captor. By attributing such tactics to a fictional Ottoman tyrant who threatens Christian cities (3.1.7-15), Marlowe exploits contemporary figurative associations between material and spiritual pollution. Echoing the contemporary prejudices that led Elizabethan Protestants to blame plague outbreaks on immorality and religious nonconformity, this characterisation of Bajazeth belongs to an influential stage tradition of the "Turk" as demonised villain (Dimmock 143). As we have already seen, however, Bajazeth is not the only would-be ruler whose earthly ambitions are complemented by his desire for atmospheric command. Although the former's tactics fail in *Tamburlaine Part 1*, which ends with his brutally-enacted suicide (5.1.286-304), Marlowe's protagonist adopts a similar strategy in *Part 2*. Following the

death from illness of his beloved Zenocrate, Tamburlaine burns the town of Larissa to ensure that he may inflict “dearth and famine” on the land where Zenocrate died (*Part 2* 3.2.3; 3.2.9). The resulting “heaps of exhalations” are both figuratively and materially significant, at a time when the same terminology of “exhalations” could denote atmospherically-polluting mourning sighs (Burton O3r-O3v), atmospheric phenomena such as earthquakes (Aristotle 202-3), or the airborne transmission of plague (Fulke B7v-B8r). Indeed, it seems likely that all these meanings are simultaneously in play. Rather than imagining that the natural world reflects his emotions, Marlowe’s protagonist forcibly reshapes the local atmosphere to ensure such emotional and environmental correlation. Tamburlaine’s fires are the smoky, tangible counterpart to his body’s sighs, materially imprinting his melancholy on the local air during a period when excess grief was identified with vulnerability to contagion (Mazzio 175), and plague and famine went hand in hand (Hiltner 97). Thus, although aerial pollution retains the connotations of despair that it acquired in Bajazeth’s *Part 1* speeches, Tamburlaine’s own curse acquires a deadly reality that physically induces “dearth” through its polluting effects. If a fire-effect was used in performance, as the 1590 stage directions imply, the atmospheric consequences would moreover have been materially perceptible to Marlowe’s audiences, pointedly fulfilling his protagonist’s threat to literalise an existing figurative relationship between sighs and airborne contagion.

Tamburlaine’s speech directly stresses the environmental impact of his planned action, as the flames that consume Larissa extend his earlier efforts to control the air and manipulate its prophetic significance (3.2.4-7). This fire’s transformative effect on the local aerial environment artificially recreates the choking, sulphur-infused atmosphere of hell: “Flieng Dragons, lightning, fearfull thunderclaps, / Sindge these fair plaines, and make them seeme as black / As is the Island where the Furies maske”

(3.2.10-2). Tamburlaine, the champion of gunpowder warfare, here realises the figurative associations between his martial technology and demonic pollution that were introduced in *Part 1* of Marlowe's war drama. The related threat of material infection is equally pressing. As discussed above, *Part 2* includes more direct stage cues for smoke-emitting stage effects than *Part 1*, suggesting a deliberate effort to reflect Tamburlaine's increasingly polluted discourse within the aerial environment of Marlowe's theatre. In early modern performances, the spectacle of "*the Towne burning*" (*Tamburlaine the Great* H2r) in response to Zenocrate's death from an unidentified sickness might additionally have evoked the spectre of epidemic disease, since public bonfires were a common sight during urban plague outbreaks (Dugan 102). Such real-life conflagrations were intended to purge the air of contagion, as Bullein explains (*Gouernment* H2r-H2v), but Marlowe's Tamburlaine revises the bonfire's medical significance by characterising the resulting smoke as a source of deadly contagion. Like the fumes of his army's gunpowder-powered weapons or the fiery comet that accompanies his progress, this noxious fug further extends his deadly reach by materially altering the local aerial environment, emitting polluted vapours that rise up to the "highest region of the aire" (3.2.2).

Marlowe's identification of his protagonist with airborne pollution continues when Tamburlaine proposes to transport his wife's corpse from battlefield to battlefield. At first, Zenocrate's role is ostensibly inspirational, with her widower anticipating the aerially- or ethereally-transmitted "influence" that her "looks will shed [...] in my campe" (3.2.39). As the passage continues, however, Tamburlaine primarily imagines these "looks" as externally-targeted projectiles that will prove as deadly to his enemies "As if *Bellona*, Goddess of the war, / Threw naked swords and sulphur bals of fire / Upon the heads of all our enemies" (3.2.40-2). Such detail most immediately suggests

either Greek fire or the emergent hand-grenade technology detailed by Paul Ives in *The Practise of Fortification* (3.2.41n.), extending Tamburlaine's prior deployment of gunpowder-powered weapons. Yet Zenocrate's figurative – and perhaps literal – influence is additionally reminiscent of the plague in its contagious, airborne effect. During a period when anti-theatricalists denounced the pestilential force of the theatre's visual spectacles (Gosson B7v-B8v), Marlowe's classically-inflected terminology of mortally-wounding "looks" might recall the ancient belief that "certaine women of *Scithia*, being provoked and vexed against some men, had the power to kill them, onely with their looke" (Montaigne E4v); Zenocrate is Egyptian by birth, but "Scythian" by marriage. For Montaigne, this classical anecdote illustrates the dangerously contagious power of the imagination. Deadly thoughts, he explains, are transmitted "even as one body ejecteth a disease to his neighbour, as doth evidently appeare by the plague, [or] pox" (E4v). The disease analogy consolidates his earlier suggestion that the plague, too, can be transmitted through the force of the imagination (E2v), and is potentially relevant to Marlowe's imaginative fiction. Early modern commentators also regarded "picture[s]" of the type commissioned by Tamburlaine as potential transmitters of contagion or its cure (3.2.25; Gilman 87-91), while Marlowe's specific reference to Zenocrate's intangible "influence" might further evoke plague's invisible, aerial transmission. Although the term often denoted supernatural or occult intervention (*OED* n. 2a), it could also signify the airborne progress of an epidemic disease: the playwright and physician Thomas Lodge for instance defines "contagion" as a "venemous and pestilent influence" in his 1603 *Treatise of the Plague* (C1r), subsequently characterising the plague itself as an "euill influence of the ayre" (E3r).

In imagining Zenocrate as a quasi-divine weapon, Tamburlaine blurs the boundaries between commemorative portrait and deceased body in ways that imply a



kind of early biological warfare. Medieval and early modern examples of armies using plague-ridden corpses as a weapon ranged from the Tartar army that besieged Caffa in 1345 to the comparable strategies of medieval European forces (Wheelis n. pag.). The former example was cited in early modern accounts of how the plague first reached Europe (Boehrer 22), hinting at a long-standing association between pestilence, Tartar armies, and military invasion that Marlowe could have exploited in *Tamburlaine*. Marlowe might also, or alternatively, have encountered Francesco Guicciardini's account of the fifteenth-century Neapolitan response to French invasion:

[The Neapolitan defenders] so corrupted the ayre, that the french men by nature intemperat and impatient of heat, fell into maladies, and they in time were turned into the nature of the plague, whose contagion was caried into the body of the armie by certeine that were infected who were expresly sent out of *Naples*[.] (BBBBB4v)

This English translation of Guicciardini's history, produced by Geoffrey Fenton, was published in 1579 and sold in the Blackfriars (\*2r), so copies would have been circulating in Marlowe's London. The same Neapolitan outbreak is discussed in Raimond de Beccarie de Pavie de Fourquevaux's *Instructions for the Warres*, which was translated into English by Paul Ive. Ive's own *Practise of Fortifications* was Marlowe's source for Tamburlaine's next speech in the same scene (3.2.55-92; Fuller and Esche xxiv). Although Ive's translation initially attributes the Naples outbreak to French "negligence" rather than their enemy's stratagems (Fourquevaux O7r), the treatise later describes how the Neapolitan "Lord Rance" used clothing and other items belonging to those sick from the plague – as well as "the persons infected" themselves – as biological weapons against the French forces at Cremona (S4v). Even as Marlowe alludes to strategies that might be deployed in contemporary warfare, however, his fictional protagonist characteristically augments the threat by scaling it up to a

supernatural level. Tamburlaine imagines not the crude flinging of corpses or old clothes, but rather subtly contagious “looks” that, as in the early modern iconography of heaven-sent plagues (Gilman 90-1), will imperceptibly induce disease. In this respect, his deployment of Zenocrate’s portrait to infect his enemies can be regarded as the culmination of his gunpowder-powered ambitions, enabling him to replace the sulphuric fumes of war with an even deadlier source of airborne contagion.

Within *Tamburlaine Parts 1* and *Part 2*, Marlowe’s protagonist employs what Richard Wilson has termed a “state-of-the-art display of early modern European ballistic supremacy” to conquer not only the earth, but the very atmosphere (“Visible Bullets” 58). At times, these conquering fumes threaten to dissolve into unchecked contagion. If guns and fire-effects were used in early performances of these plays, the small interior atmosphere of the Rose would have gradually filled with sulphur-tinged emissions. Such noxious smoke might materially realise Tamburlaine’s aspirations of unending expansion, but it also prospectively identifies his ambitions with literal and spiritual pollution. Even if such effects were not used, Bajazeth’s curses threaten to fill the fictional and playhouse atmosphere alike with figurately polluting “moorish” fumes (*Part 1* 4.2.6): a threat realised in *Part 2* through Tamburlaine’s sighs, laments, and pyrotechnical efforts. In the latter play, moreover, the supernatural accuracy Tamburlaine boasts of in *Part 1* appears to break down. Following Zenocrate’s death, her “looks” fall on Tamburlaine’s soldiers as well as his enemies, and Tamburlaine’s *Part 1* vision of aerial spirits controlling his bullets gives way to the all-enveloping fumes that he uses to recreate hell on earth (*Part 2* 3.2.1-14). By the end of Marlowe’s two-part drama, even the tripartite atmospheric divisions of the early modern cosmos are disintegrating under the assault of Tamburlaine’s polluting fumes. Thus the fictional

warlord's own death provokes his followers to envisage an apocalyptic dissolution of the cosmos in which "heaven and earth" "Meet", and "al things end" (5.3.250).

As the discursive and sensory experiences of pollution converge in *Tamburlaine*, Marlowe implicitly registers contemporary drama's contagious reputation. His protagonist's comprehensive destruction of Larissa, transforming the town into a blackened, smoking hell (3.2.10-2), utilises methods suggestively reminiscent of the early modern theatre's reliance on smoke-emitting squibs and sulphuric fumes to represent the underworld and its denizens (Harris 476-7). Similarly, Tamburlaine's "aerial" weaponisation of the deceased Zenocrate credits this dramatic character's "looks" with the same contagious power that early modern anti-theatricalists attributed to the early modern theatre: according to William Rankins, for instance, the "infectious sight of Playes" would cause the spread of "spotted enormities" (A1r). In linking moral and medical contagion, pollution and plague, Marlowe identifies the onstage waging of aerial warfare with the deadly threat that a polluted theatrical atmosphere might represent to practitioners and playgoers alike. Yet, ultimately, Marlowe's war drama is quite unapologetic in deploying such effects. Tamburlaine must surrender to death, but with his last breaths he catalogues his many victories; his greatest regret is not the tactics he has used, but that he must die with lands still left to conquer (*Part 2* 5.3.124-61). Even his transgressive closing threat to "march against the powers of heaven, / And set blacke streamers in the firmament" (5.3.48-9) might have been materially echoed in a playhouse that had recently been filled with the sulphuric fumes of performed gunfire and, possibly, an onstage bonfire (5.1). Such "black streamers" would certainly have provided an apt conclusion to a war drama in which the capacity to pollute the air becomes an attribute of imperialising might.

Marlowe's *Tamburlaine* plays register foul air's symbolic associations with moral and medical contagion. To that extent, Marlowe suggestively anticipates Dekker's later comparison between war drama and the outbreak of plague in the "sinfully-polluted Suburbs" (*Wonderfull D1r*). At the same time, however, the theatre's reputation for transmitting contagion provides Marlowe with a means to illustrate and celebrate the expansive force possessed by his conquering protagonist - and, by extension, his own dramatic fiction. For Marlowe, it seems, airborne pollution can be spiritually and materially deadly. But, in Marlowe's war drama, such pollution enables Tamburlaine's near-unstoppable progress, becoming a sign of martial, atmospheric, and theatrical power.

#### **Of Powder and Pistols: Air Pollution in *Henry VI Part One* and *1 and 2 Henry IV***

Shakespeare was doubtless familiar with Marlowe's *Tamburlaine* plays, which proved to be both commercially successful and culturally influential (Levin). He may also have acquired a more personal understanding of Marlowe's interest in martial pollution. If the editors of the *New Oxford Shakespeare* are right to identify Marlowe as one of the authors of *Parts One, Two, and Three of Henry VI*, and Shakespeare as their adaptor or reviser, the two writers shared a collaborative stake in these plays of the early 1590s. I have already mentioned the striking episode from *Henry VI Part One* in which an explosion is realised onstage by "shoot[ing] off chambers" (1.6.47 SD). This play later incorporates the same blurring of material and moral pollution that we find in *Tamburlaine*, when Talbot denounces the French "witch" Joan la Pucelle's polluting effect on the English forces (1.7.21). Talbot's comparison of Joan's noxious influence to "smoke and [...] noisome stench" (1.7.23) is extended in the play's final act, as she

summons “*Fiends*” to the accompaniment of “*Thunder*” (5.3.7 SD; 5.3.4 SD): a sulphur-inducing series of special effects (Harris 466; Jones 37). As with Tamburlaine and Bajazeth, however, Joan’s atmospheric control is contested by her opponents. The English soldier Sir William Lucy perhaps echoes Tamburlaine’s mourning of Zenocrate when, in a scene sometimes attributed to Marlowe (Segarra et al. 246), he fantasises about transforming “mine eye-balls into bullets” to avenge Talbot’s death (4.7.79; see Martin 83). The effect of this conventional analogy is consolidated when Joan compares Lucy to “old Talbot’s ghost”, in an image of prospective atmospheric pollution, and warns the French Dauphin about the deadly contagion that the English corpses of Talbot and his son might spread among their army: “To keep them here / They would but stink and putrefy the air” (4.7.89-90). As we shall see, Shakespeare would realise this threat vividly in his 1599 war drama *Henry V*.

Such themes of pollution and plague are significantly less pronounced in *Parts Two* and *Three* of *Henry VI*. But in his two *Henry IV* plays, written between approximately 1596 and 1598, Shakespeare revisits the associations between staged warfare and air pollution that Marlowe’s *Tamburlaine* had drawn approximately a decade earlier. *2 Henry IV* is famously introduced by the character of Rumour, whose representation echoes Ovid’s characterisation of Fame in Book XII of his *Metamorphoses* (U4v). In particular, Rumour’s prologue advertises the centrality of airborne “surmises” and “conjectures” to the dramatic narrative that will follow (*2 Henry IV* 0.16):

Open your ears; for which of you will stop  
The vent of hearing when loud Rumour speaks?  
I from the orient to the drooping west,  
Making the wind my post-horse, still unfold  
The acts commencèd on this ball of earth.

[...] Rumour is a pipe

Blown by surmises, Jealousy's conjectures,  
And of so easy and so plain a stop  
That the blunt monster with uncounted heads,  
The still-discordant wav'ring multitude,  
Can play upon it. (*2 Henry IV* 0.1-5, 15-20)

As Somogyi points out, Rumour's wind-blown entrance is an apt precursor to a play in which the air "is thick with the blended truths and lies of a whole sequence of posts, letters, messages, and messengers" (136). Such "thicke" air, as Burton's *Anatomy* illustrates, was often associated with miasmatic contagion during the early modern period (G7r). As Carla Mazzio notes, contemporary authors even drew analogies between the effect of rumour on the state and the "pestilent" vapours that threatened the human body: John Donne, for instance, announced in 1623/4 that "these *vapours* in us, which wee consider here pestilent and infectious fumes, are in a State *infectious rumors*" (Donne 100-1; Mazzio 167-8). For Joseph A. Porter, Shakespeare's characterisation of the "bladder"-like Falstaff, Prince Harry's "sweet creature of bombast" (*1 Henry IV* 2.5.330, 335), extends this theme; Porter suggests that Falstaff comes to embody Rumour within the main dramatic narrative (100). Somogyi further proposes that Pistol takes over this role by the end of *2 Henry IV*, citing Stephen Booth's suggestion that the roles of Rumour and Pistol may have been doubled in performance (Somogyi 176).

Such interpretations illustrate how pervasive the associations between bloated over-inflation and atmospheric pollution become in *Henry IV*. The imagery of swelling is often important in Shakespeare's drama, featuring centrally in works such as *All's Well That Ends Well*, *Hamlet*, and *Macbeth*. In the case of Shakespeare's late Elizabethan war drama, though, such allusions especially - and parodically - recall Marlowe's practice in *Tamburlaine*. That debt is famously acknowledged when Shakespeare's Pistol delivers his own bombastic, bathetic version of Marlowe's well-known "Jades of *Asia*" speech (*Tamburlaine Part 2* 4.3.1), responding to Doll

Tearsheet's insults with the rhetorical demand: "Shall pack-horses / And hollow pampered jades of Asia, / Which cannot go but thirty mile a day, / Compare with Caesars and with cannibals, / And Trojan Greeks?" (*2 Henry IV* 2.4.150-4).

Pistol, whose name registers the "noisy inefficacy" associated with that weapon during the early modern period (Somogyi 162), is matched in *1 Henry IV* by Hotspur, for whom a kingdom proves "too small a bound" (5.4.89). Characterised by a fascination with ambitious imaginative projections that leads him, like Shakespeare's later protagonist Hamlet, to eat "the air on promise of supply" (*2 Henry IV* 1.3.28; cf. *Hamlet* 3.2.90-1), this "gunpowder Percy" (*1 Henry IV* 5.4.120) inherits Tamburlaine's tendency to identify himself as an airborne elemental force: a "thunderbolt" striking through the smoky battlefields of England, Scotland, and Wales (*1 Henry IV* 4.1.120-4). Hotspur additionally shares Tamburlaine's aspirations to secure exclusive atmospheric control. Hotspur's ally Glendower initially tries to assert his own magical power over the elements (3.1.12-6, 34-54). The Welsh leader's claims echo both Tamburlaine's boasts that "gratious" and "smiling stars" foretell his triumph (*Tamburlaine Part I* 1.2.92; 3.3.42), and the demonic magic practiced by another of Marlowe's late Elizabethan protagonists, Doctor Faustus (*Dr Faustus* 3.36-9; 5.86-116). However, Hotspur immediately disputes Glendower's assertions on meteorological grounds, implicitly asserting his superior right to interpret atmospheric phenomena by adopting the analytical framework of natural philosophy:

Diseasèd nature oftentimes breaks forth  
In strange eruptions; oft the teeming earth  
is with a kind of colic pinched and vexed  
By the imprisoning of unruly wind  
Within her womb, which for enlargement striving  
Shakes the old beldam earth, and topples down  
Steeple and moss-grown towers. At your birth  
Our grandam earth, having this distemp'rature,  
In passion shook. (*1 Henry IV* 3.3.25-33)

Like Marlowe's Tamburlaine, Hotspur is not merely content to analyse the aerial environment, but also registers the material impact of his own martial activities upon the fictional air. Of all the characters in *Henry IV*, it is Hotspur who comes closest to glorifying the atmospheric conditions of battle. Noting of his enemies that "[t]hey come like sacrifices in their trim, / And to the fire-eyed maid of smoky war / All hot and bleeding will we offer them" (4.1.114-6), Shakespeare's rebellious soldier disparages those "perfumèd" lords who, like Henry IV's royal messenger, fear the contagious environment of the battlefield (1.3.35). Indirectly contrasting the implicitly enervating fumes of "sweet" scent - and perhaps also courtly tobacco-smoking - to the "hot", "dry" odour of "manly" conflict (1.3.53; 4.1.116; 1.3.30), Hotspur antagonistically reports how this messenger filled his nostrils with perfumed "snuff" even as he insulted the soldiers' corpses that came "[b]etwixt the wind and his nobility." (1.3.40, 44). With Hotspur provoked as much by the lord's artificial scent as by his attitude to the army's dead and its anachronistically-advanced ordnance, this reported encounter imagines a power struggle that plays out at an olfactory level. The evoked smell-scape of the lord's "pouncet-box" and "perfumèd" clothing is opposed to the odour of the decaying dead and the sulphuric emissions from the soldiers' "vile guns" (1.3.37, 62). Hovering over the battlefield, these imagined scents hint at the relationship between war's "smoky" fumes and bodily contagion. While the anonymous lord defensively adopts a strategy that Shakespeare's contemporaries often used against the plague (Dugan 18, 111), Hotspur seeks to appropriate the contagious threat of these pestilent, stinking emissions as a foil to his own expansive martial presence. For all Hotspur's efforts, however, his words are implicitly undercut in performance by the fact that he is speaking to the King and his court: characters who would have been presented in visually impressive, and



possibly scented, outfits that might have included the common accessory of a pomander or pouncet-box. Thus, Hotspur (or the actor playing this role) is surrounded by perceptible visual and perhaps olfactory cues that accord much more closely with the artificial environment the anonymous lord sought to create than the battlefield Hotspur now verbally recalls.

In *Henry IV*, Hotspur cannot retain the aerial control that he aspires to. Instead, crucially, he has already been pre-empted by his rival Prince Harry. Just prior to Hotspur's verbal evocation of war's atmospheric conditions, Harry announces that while he may temporarily "permit the base contagious clouds / To smother" him, he will eventually break "through the foul and ugly mists / Of vapours that did seem to strangle him." (*1 Henry IV* 1.2.195-200). Harry presumably alludes here to the stale fogg of Boar's Head tavern, and its "surfeit-swelled" inhabitants (*2 Henry IV* 5.5.50). Later, though, he explicitly identifies Hotspur's rebellious forces as a comparable source of airborne contagion. Before the decisive battle of *1 Henry IV*, for instance, Harry registers the "blust'ring" presence of the "southern wind": the weather pattern most often linked to plague epidemics by early modern physicians (Lowe E2v). The king is less responsive to such figurative and meteorological convergence, advising his son that martial and atmospheric victory go hand in hand: "nothing can seem foul to those that win" (5.1.3-8). Henry IV's words pre-empt the "fair" and "foul" battlefield atmosphere of Shakespeare's later tragedy *Macbeth* (1.1.10). In *2 Henry IV*, however, Harry continues to liken the remaining rebels to a pestilence borne on the warm southern air. Extending the prologue's attention to the contagious effects of rumour, Shakespeare's prince muses that a "tempest of commotion, like the south / Borne with black vapour, doth begin to melt / And drop upon our bare unarmèd heads" (2.4.366-8). Through his subsequent victory over these enemies, Harry indirectly realises his prediction from *1*

*Henry IV*. Gaining a symbolically monarchical command over the aerial environment, he disperses the contagious fumes of revolt and rumour as he will shortly distance himself from the bloated companions of his Boar's Head Tavern days.

### ***Henry V: Waging Biological Warfare***

In performance, Harry's promise to break through "the foul and ugly mists" (*Henry IV* 1.2.195) might have been perceptibly mirrored by the atmospheric conditions of Shakespeare's theatre. Since the decisive battle of *2 Henry IV* is concluded through trickery, any smoke generated by the firing of weapons could have largely dispersed by the time Shakespeare's prince re-enters "*as King*" (5.2.41 SD). When both parts of *Henry IV* are placed alongside *Henry V*, however, the fictional Harry's claim to have purified the atmosphere resonates uncertainly with Shakespeare's subsequent representation of Henry V. From 1599, Shakespeare's historical war dramas probably moved from the stages of the Theatre and the Curtain, with its suggestively martial name (*OED* "curtain" *n.* 4a), to the Lord Chamberlain's Men's new South Bank playhouse (Wiggins 98-104). In fact, along with *Julius Caesar*, *Henry V* is often identified as a work written for the 1599 opening of the Globe (see Craik 4-6). The unusually large size of the Globe playhouse is well known. Deducting the space occupied by the tiring house and the "cellarage", Smith credits it with an interior volume of about 231,028 cubic feet - more than four times that of the Rose (Smith 210). Although a more extensive projecting canopy may have complicated matters by preventing gaseous as well as verbal emissions from diffusing into the sky overhead, it is likely that smoke released into this large theatre would take longer to spread from the stage platform and throughout the space occupied by the audience members. In

consequence, the overall sensory impact was probably less intense than at a smaller venue. Nonetheless, contemporary editions of plays performed at the Globe continue to give stage directions for various explosive effects - simulating storms, battles, or supernatural occurrences - that would risk producing a “foul” playhouse atmosphere, as for instance in the 1623 Folio play-texts of *Hamlet* (qq1v); *King Lear* (rr2r); and *Macbeth* (ll6r). Richard Wilson has shown that the language of plays such as *Julius Caesar* remains comparably suffused with the “reeking” imagery of environmental pollution, into which, he suggests, “the ‘roomy’ space of the Globe would always be liable to dissolve” (*Free Will* 147). Together, such performative and figurative references signal that Shakespeare’s interest in contagious and bloated atmospheric conditions survived his company’s change in performance venue. If anything, Shakespeare’s preoccupation with the aerial environments of his fictions and his theatre appears to have intensified in his Jacobean drama, perhaps due to a more personal familiarity with theatrical and atmospheric conditions at the smaller indoor playhouses. Although Shakespeare’s company did not start playing at the Blackfriars playhouse until 1609, James Burbage and his sons owned the newly-constructed theatre from 1596 (Gurr “London’s Blackfriars” 20-7), and Shakespeare may have anticipated his drama’s impending transfer from the Globe’s comparatively open frame to this enclosed venue.

If the dangers of noxious breath are given particular attention in Jacobean plays such as *Antony and Cleopatra* (c. 1606) and *Coriolanus* (c. 1608), Shakespeare’s *Henry V* focuses sharply on the atmospheric conditions of war. The title protagonist’s deployment of biological threats is especially striking. Whereas characters such as Cleopatra and Coriolanus fear the impact that others will have on their own aerial environments, Henry V envisages air pollution as a weapon in terms that recall the threats of Marlowe’s Tamburlaine and the latter’s rival Bajazeth. This aspect of the play

first gains force when Exeter, as Henry's ambassador to France, warns the French king that "in fierce tempest is he [Henry] coming, / In thunder and in earthquake, like a Jove" (2.4.99-100). The image extends Henry's prior promise to "dazzle all the eyes of France" by raining down "gunstones" upon the Dauphin and his followers (1.2.279-82). As in Marlowe's *Tamburlaine*, figurative and material threats converge. The English king's advertised intention of filling the "caves and womby vaultages of France" with the echoes of his ordnance is amply fulfilled shortly afterwards (2.4.124), when Henry's forces besiege the town of Harfleur. In a possible echo of *I Henry VI*, Shakespeare's audiences are warned that "the nimble gunner / With linstock now the devilish cannon touches" (3.0.32-3). Although the Chorus deprecatingly adds that playgoers may need to "eke out our performance with your mind" (3.0.35), the 1623 Folio edition's direction that "*Chambers goe off*" (h5r) indicates that the playhouse would have filled with the sounds – and the smoky fumes – of gunpowder-powered military ordnance.

Such playhouse conditions would have exacerbated the impact of Henry's subsequent threats against Harfleur. In a potential echo of Bajazeth's desire to smother Constantinople (*Tamburlaine Part 1* 3.1.50-67), Shakespeare's protagonist urges the French town's inhabitants to surrender "[w]hiles yet the cool and temperate wind of grace / O'erblows the filthy and contagious clouds / Of heady murder, spoil and villainy" (3.3.113-5). Seeking to frighten them into cooperating, he demands:

What is it then to me if impious war  
 Arrayed in flames like to the prince of fiends  
 Do with his smirched complexion all fell feats  
 Enlinked to waste and desolation? (3.3.98-101)

Here Henry V connects the blackening fumes emitted by his army's gunpowder-powered weapons, which might have left their material trace on the painted heavens and wooden beams of the early modern playhouse, to the atmospheric conditions of hell.

The passage echoes Tamburlaine's efforts to render the town of Larissa as "black / As is the Island where the Furies maske" (3.2.11-2). Moreover, the spiritually-ominous connotations are heightened in a context of inter-Christian, European conflict. Shakespeare's fictional English king exploits the contemporary tendency to denounce gunpowder as a demonic technology (Hale 394-5) to imaginatively transform the aerial environment of neighbouring France into a polluted, "smirched" atmosphere. Harfleur's defenders are rendered vulnerable, helpless to resist the permeating, "unconquerable" force of Henry's weaponised air (Seneca 180-1; cf. *Hamlet* 1.1.126). But the English king's victory comes at a cost. To win, he embraces the polluted weapons that were symbolically associated with demonic "fiends" and, for regular playgoers, with Marlowe's overreaching "Turkish" warlords. Thus, as "the blast of war blows in our ears" (3.1.5), and the mining of Harfleur gestures towards the risk of a more substantial playhouse explosion (3.3.1-9), Henry threatens the recalcitrant town in terms that underscore the "filthy and contagious" threat his fictional army represents (3.3.114).

Henry V's tactics prove successful; Harfleur's Governor, citing the non-appearance of an anticipated relief force, surrenders the town to the English king. Yet this siege episode simultaneously invites audiences to reflect on the consequences that might result from immersing oneself in the staged spectacle of "impious war". Shakespeare's drama promises playgoers the "history" of "warlike Harry" (0.32; 0.5), but the English victory enacted at the Globe is not necessarily the moral spectacle that Nashe had identified in the earlier *Famous Victories of Henry V* (c. 1586; see *Pierce* F3v). Instead, Shakespeare's depiction of Harfleur's capture draws attention to the representational technologies of the theatre and, especially, their polluting atmospheric impact. As in *Tamburlaine*, playgoers are encouraged to consciously register the pervasive sulphuric fumes that were an inevitable by-product of staged gunfire, and

which are here exploited to complement the dramatic protagonist's verbal threat. The morality of warfare becomes potentially suspect by virtue of its figurative and symbolic alignment with the devil and non-Christian warlords – even when the character deploying such technology is one of England's great medieval warrior kings. Rather than suppress such implications or even prioritise gunpowder's spectacular force, Shakespeare's imagery stresses the dangerous connotations for a theatre - and a culture - of war. While full-scale devastation is averted by the French town's surrender, Shakespeare's *Henry V* nonetheless posits an ominous association between staged warfare and demonic manifestation. As Randall Martin notes, that threat would subsequently be fulfilled in *Macbeth*, when witches "bubble" forth from the polluted battlefield environment (Martin 79-80); uniquely in Shakespeare's drama, both *Macbeth* and *Henry V* explicitly identify "filthy air" with an "extreme battlefield environment" (107). Even in his earlier English history, however, Shakespeare strikingly reworks the gunpowder warfare popularised by Marlowe's *Tamburlaine* to interrogate the moral and material consequences of adopting Satan's polluting tactics on the early modern stage.

In *Henry V*, the deployment of airborne pollutants is most strikingly evoked prior to the battle of Agincourt. While Shakespeare's audiences would have anticipated the aerial superiority of the English army's projectile weaponry, the historically-famous longbows fail to appear in *Henry V* (Martin 80). Instead, Henry's defiant pre-battle response to the French herald emphasises an alternative form of atmospheric colonisation:

And those [soldiers] that leave their valiant bones in France,  
Dying like men, though buried in your dunghills  
They shall be famed. For there the sun shall greet them  
And draw their honours reeking up to heaven,  
Leaving their earthly parts to choke your clime,  
The smell whereof shall breed a plague in France.  
Mark then abounding valour in our English,

That, being dead, like to the bullets grazing  
Break out into a second course of mischief,  
Killing in relapse of mortality. (4.3.99-108)

With his army starving, Shakespeare's protagonist focuses not on physical weapons but on the intangible danger of battlefield contagion. As he attempts to refashion the disease-ridden state of his forces and their prospective slaughter into a source of military advantage, the stench of the English camp acquires a new, and ominous, status. During a period in which the "rotting smell" of death was considered "capable of breeding new kinds of harm" (Dugan 100-1), Henry V "opportunistically threatens to turn this kind of miasma into a biological weapon" (Martin 98). Echoing both Tamburlaine's imaginative transformation of his deceased wife into a plague-transmitting weapon of superhuman force, and contemporary accounts of the tactics used against the French army during their doomed fifteenth-century occupation of Naples, Shakespeare's king envisages English corpses weaponising their airborne capacity to "choke your clime" and "breed a plague in France" (4.3.103-4). In contrast to the dematerialised "influence" that Marlowe's protagonist envisages, however, the fictional Henry specifically emphasises the olfactory and physical process of putrefaction. The "reeking" stench of these rotting bodies, whose noxious effect redoubles like ricocheting "bullets" (4.3.102; 4.3.106-7), further recalls the poisoned missiles and contagious vapours that Bajazeth wished against and upon Tamburlaine (*Tamburlaine Part 1* 4.2.6-7; 5.1.221-4). Extending the scope of Henry's imagined command over the fictional air, the process of decomposition itself becomes a weapon of biological warfare, at a time when the air was understood to be particularly "thick"- and therefore toxic - around the recently dead (Mazzio 178). Dekker, who apparently found Tamburlaine's martial deployment of pollution sufficiently arresting to connect Marlowe's war drama with the plague fifteen years later, may have been further

influenced by Shakespeare's representation of decomposition as an aerial weapon in *Henry V*. As we have seen, the threats of putrefaction and pestilence similarly unite in Dekker's prose work *The Dead Tearme* (1608), in which the ghostly breath of a personified plague embodies the miasmatic scope of the epidemic (G1r; see Mazzi 178).

### **Conclusion: The Power of Pollution?**

In their late Elizabethan war drama, Marlowe and Shakespeare interrogate how gunpowder-powered warfare's perceptible impact on the aerial environment might complement martial ambitions of conquest. Within these plays' episodes of earthly and atmospheric contestation, figurative and material understandings of pollution regularly converge. The sulphuric fumes imaginatively cued by allusions to ordnance's deployment, or literally produced by stage episodes of gunfire, are used to characterise such martial technology as a supernatural, even demonic, assault. At the same time, the material consequences of these fictional battlefields' worsening air quality are highlighted through the protagonists' weaponisation of pollution and, especially, by analogical and literal reference to its contagious, plague-bearing potential. As far as I am aware, neither Marlowe nor Shakespeare would have found a strong precedent for this approach in their sources. The comparatively close alignment between the bubonic plague's fourteenth-century arrival in Europe (1346-53) and the reign of the historical Timur (1370-1405) may perhaps have suggested a loose connection to Marlowe: the spread of plague into Europe was sometimes blamed on Tartar armies and their purported use of biological warfare (Boehrer 22); and artillery, too, was first introduced into European warfare from the Islamic world (Martin 79-80). Yet these links are indirect, indicating that Marlowe consciously elaborated on the relationship between



staged warfare and airborne contagion in his two-part war drama. Moreover, the subsequent incorporation of such martial technology into English history plays such as *Henry VI Part One* or *1 and 2 Henry IV* is notably ahistorical, while the degree to which Shakespeare's fictional Henry V relies upon the same gunpowder tactics as Marlowe's Scythian warlord is especially striking.

What, then, might be the significance of the early modern theatre's interest in polluting bodies and contagious fumes? One possibility is that the war drama of Marlowe and his contemporaries registers dissatisfaction, or at least discomfort, with the Elizabethan regime's plans to ally with the Islamic Ottoman empire against England's Catholic enemies (Brotton 117-8, 1-16; see for example Dimmock 10-18). Bajazeth's fondness for atmospheric poisons perhaps invokes a negative stage stereotype of polluting "Turks", while even Tamburlaine's military success is arguably compromised by his quasi-demonic, over-reaching reliance on a sulphurous, contagious aerial technology. Other critics have identified the ambivalent representation of ballistic technology in Shakespeare's war drama with the latter playwright's perceived humanist tendency towards pacificism (McKeown 7-8). Randall Martin for instance proposes that Shakespeare, influenced by "the Erasmian ethics of his Humanist education", consistently seeks to expose - and condemn - gunpowder's "annihilating reality" (81). While such contexts probably influenced contemporary responses to Marlowe and Shakespeare's war drama, however, I suggest that their plays are at least equally attentive to the specifically theatrical implications of *staging* war. In *Tamburlaine*, Marlowe's morally challenging but practically effective alignment between atmospheric pollution and martial conquest is not merely - or perhaps even primarily - a commentary on contemporary military practice. Rather, the aerially-expansive ambitions of Bajazeth and his surpassing rival Tamburlaine figure the "swelling"

capacity of Marlowe's imaginative fiction (cf. Plutarch B4r), which, like the imagined and material fumes of smoky war, expands to fill the early modern playhouse. It is this quality that, from *Henry VI Part One* onwards, Shakespeare explores through his English histories. In particular, I argue, Shakespeare reflects in *1* and *2 Henry IV* and *Henry V* on the potential implications of participating in a war drama tradition that had been shaped by Marlowe's example and was realised through materially-polluting stage effects. Shakespeare's intertheatrical engagement with the two parts of *Tamburlaine* is signalled by everything from direct linguistic parody to a shared thematic interest in conquering characters who, having deployed smoke-emitting ordnance, ultimately seek to weaponise the very atmosphere. Thus, during a period when the theatres were already vulnerable to contemporary accusations of moral and material contagion, Shakespeare dramatises the potentially polluting consequences of fictional warfare's striking acoustic, visual, olfactory, and figurative impact on the theatre's aerial environment.

Early modern writers appreciated the value of unpolluted air. Inventors such as Hugh Plat sought to reduce the sooty emissions that pervaded contemporary London (B4r-B4v); physicians and natural philosophers advised their readers to live in areas with healthy atmospheric conditions (Burton X7v; Bacon L11r-L11v); and chorographers and chroniclers frequently asserted the air quality of their native region(s) - regardless of historical reality (Cavert 32). Despite the increasingly poor air quality that defined a rapidly-expanding London, Michael Drayton's *Poly-Olbion* loyally credits the city with "most cheerefull aire", while William Camden's Britain is, in the translated words of his friend John Jonston, a place where "Aire, Land, Sea, and all Elements, shew favour every way" (Drayton Y6v; Camden OO1r). Yet, concurrently with such efforts, and perhaps in acknowledgement of an increasingly unescapable truth, London's polluted actual state also began to gradually acquire positive and "patriotic" associations,

becoming “a symbol of a new kind of urban life with all of its grandeur and grime” (Cavert xix). Plague, too, was – as Ian Munro points out – “the quintessential urban malady” (242), with the virulence of urban outbreaks distinguishing a rapidly-growing London from its regional counterparts. Thus, during a period in which the decline in urban air quality went hand in hand with a growing ability to exploit the air through wind-powered technologies, “the smoke of London [...] offered the world a model in which development, power, and environmental degradation would progress together” (Cavert 238).

In Elizabethan war drama, as in early modern London, the threat of pollution becomes a necessary by-product of the theatrical and martial power secured through the exercise of sulphurous new technologies – or even, at times, the very source of such power. Marlowe’s *Tamburlaine* plays influentially led the way in dramatising these connections. The title protagonist overcomes rivals such as the Ottoman emperor Bajazeth by becoming not only the most successful warrior, but also the most prolific source of figurative and gunpowder-induced aerial contagion. Shakespeare, who might have adapted Marlowe’s depiction of European martial pollution in *Henry VI Part One*, responded closely to such themes in his *Henry IV* plays. As Hotspur and Harry compete for definitional control over the fumes of “smoky war”, which they respectively associate with “manly” valour or pestilent rebellion, Shakespeare ultimately repudiates *Tamburlaine*’s polluting precedent (as embodied by the “gunpowder Percy”) through the fictional example of Prince Harry. In *Henry V*, however, Shakespeare revisits the question of how to balance atmospheric quality with performative effect. His warrior protagonist employs martial tactics that, while successful against England’s French rivals, are accompanied by ominously sulphuric emissions. It seems possible that Shakespeare’s shift towards associating martial pollution with his English protagonist

was inspired by the greater interior volume of the Globe playhouse, which presumably reduced the degree to which playgoers were materially immersed in the stage-generated smog of war drama. Yet Shakespeare does not soften the demonic implications that this technology had already acquired in the theatrical tradition. Instead, Shakespeare's king takes the aerially-expansive ambitions of Marlowe's protagonist to even more materially-threatening extremes. After bringing hell to earth and besmirching the heavens during the siege of Harfleur, Henry joins Tamburlaine in marshalling airborne biological weapons: weapons whose impact is now emphatically plague-bearing (*Henry V* 4.3.104), even as their imagined geographical dispersal impinges upon the atmosphere of Shakespeare's England. This angle becomes increasingly pronounced in Shakespeare's later Elizabethan and early Jacobean tragedies, with plays such as *Hamlet*, *Macbeth*, and *Timon of Athens* depicting European conflicts and European environments that are both morally and materially tainted.

Ultimately, it seems, Shakespeare's drama remains sensitive to the contagious potential of an open-air theatre whose sulphuric fumes always threatened to drift out through the playhouse's unroofed centre and into the London atmosphere. It is this risk that Dekker gestures towards when, in 1603, he imagines the near-unstoppable Tamburlaine leading the plague's advance into the "polluted" suburbs. Yet for Marlowe's fictional warlord, as for Shakespeare's Henry V, even such threatening material traces can denote martial – and theatrical - achievement. While airborne contagion may indeed be dangerous, the aerial strategies adopted by these dramatic protagonists also represents a fantasy of control over an element that, perhaps more than any other, was considered "invulnerable" and "unconquerable" (*Hamlet* 1.1.126; Seneca 180-1). The theatre's interest in such spectacularly polluting effects is admittedly hard to reconcile with a modern environmental perspective, even if Shakespeare seems to

have been more cautious than Marlowe about the implications for his playhouse's atmospheric quality. Nonetheless, it is only through appreciating the connections that Marlowe, Shakespeare, and their contemporaries drew between the smoky emissions of staged war drama and the aurally-transmitted fictions of their theatre that we can properly appreciate the significance that the dramatic representation of gunpowder-powered warfare, pollution, and plague acquired in an early modern England that was grappling with their material realities. Marlowe and Shakespeare's engagement with the consequences of staging martial pollution in their late Elizabethan war drama thus provides an important insight into the complex negotiations between air quality and atmospheric control that were taking place in relation to, within, and beyond the open-air playhouses of an increasingly polluted - and increasingly powerful - urban capital.

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