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Article abstract

Using printed and archival records, this article analyzes the sensory practices associated with air quality in sixteenth- and seventeenth-century Italy. Air pollution was a prime concern for early modern Italians, particularly in urban centres where industry, density, and frenetic sensescapes were thought to prompt chronically unhealthy airs. According to early modern experts, air quality was at the root of individual and public health. My analysis shows how Italians relied on a robust set of sonic and olfactory tools to cleanse the air and craft healthy environments. Simultaneously, a contrasting set of sounds and smells were thought to pollute the air. The sensory practices surrounding air quality reveal the highly localized and personalized nature of early modern environmental practice. This article argues that entwined social and environmental conceptions of purity and pollution shaped sensory, social, and environmental experience in the premodern city.

Air Quality and the Senses in Early Modern Italy

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Using printed and archival records, this article analyzes the sensory practices associated with air quality in sixteenth- and seventeenth-century Italy. Air pollution was a prime concern for early modern Italians, particularly in urban centres where industry, density, and frenetic sensescapes were thought to prompt chronically unhealthy airs. According to early modern experts, air quality was at the root of individual and public health. My analysis shows how Italians relied on a robust set of sonic and olfactory tools to cleanse the air and craft healthy environments. Simultaneously, a contrasting set of sounds and smells were thought to pollute the air. The sensory practices surrounding air quality reveal the highly localized and personalized nature of early modern environmental practice. This article argues that entwined social and environmental conceptions of purity and pollution shaped sensory, social, and environmental experience in the premodern city.

À l'aide de documents imprimés et d'archives, cet article analyse les pratiques sensorielles associées à la qualité de l'air dans l'Italie des XVI^e et XVII^e siècles. La pollution de l'air était une préoccupation majeure pour les Italiens de la première modernité, en particulier dans les centres urbains où les activités industrielles, la densité de population et la stimulation constante des sens étaient perçues comme des facteurs contribuant à une insalubrité chronique de l'air. Selon les doctes de cette période, la qualité de l'air constituait le fondement de la santé individuelle et publique. Mon analyse montre comment les Italiens avaient recours à un toute une gamme de ressources sonores et olfactives pour purifier l'air et créer des environnements sains. Dans la même logique, on pensait qu'un ensemble différent de sons et d'odeurs contribuait à dégrader la qualité de l'air. Les pratiques sensorielles relatives à la qualité de l'air révèlent la nature hautement localisée et personnalisée des pratiques environnementales de la première modernité. Cet article soutient que des conceptions sociales et environnementales combinées de la pureté et de la pollution ont façonné l'expérience sensorielle, sociale et environnementale dans la ville prémoderne.

In his 1592 posthumously published health manual for Roman residents, the physician Alessandro Petronio explained that during the summer, a season notorious for its sickly, torpid airs, the air quality in landlocked country villas and vineyards could be even worse in the city.¹ On the surface, this statement

1. Alessandro Traiano Petronio, *Del viver delli Romani et di conservar la sanità* (Rome: Domenico Basa, 1592), 301. Unless otherwise stated, all translations are my own.

ran contrary to the accepted early modern belief that urban air was caustic, polluted, and dangerous while country air offered a healthy escape.² This belief was seemingly confirmed by the plagues that cycled through Italian cities and towns in renewing waves throughout the sixteenth and seventeenth centuries, decimating urban populations and caused, Italians believed, by “corrupted air.”³ This prompted many urbanites to flee to the countryside to take in healthy, rural airs, if they had the socio-economic means to do so.⁴ However, the physician Petronio warned that navigating the nuances of air pollution was complex. He agreed with prevailing knowledge that in the city “the air is always dense, thick, and like the water of swamps,” but went on to write that urban residents regularly took measures to purify chronically polluted city airs.⁵ Petronio explained that in the city “the air is purged by fire and smoke and by the sounds of bells, and this breaks [the air],” cleansing it.⁶ Rural communities, by contrast, often took the luxury of clean air for granted and did not adopt regular purification practices. According to Petronio, all of this meant that when sickly summer airs became trapped in the low-lying areas outside Rome and “when the wind does not blow at all, the air of the villa and the vineyards is always more dangerous than that of the city.”⁷

Petronio was among a host of sixteenth- and seventeenth-century Italian physicians, scientists, and “agents of health” who discussed air pollution in detail and understood air quality to be inextricably linked to health and disease.⁸ Moreover, prevailing medical and scientific knowledge held that air

2. Ken Hiltner, *What Else Is Pastoral? Renaissance Literature and the Environment* (Ithaca: Cornell University Press, 2011), 101, 112–15, [dx.doi.org/10.7591/9780801460760](https://doi.org/10.7591/9780801460760); Sandra Cavallo and Tessa Storey, *Healthy Living in Late Renaissance Italy* (Oxford: Oxford University Press, 2013), 85, [dx.doi.org/10.1093/acprof:oso/9780199678136.001.0001](https://doi.org/10.1093/acprof:oso/9780199678136.001.0001).

3. Carlo M. Cipolla, *I pidocchi e il Granduca: Crisi economica e problemi sanitari nella Firenze del '600* (Bologna: Il Mulino, 1979), 33–35.

4. Sandra Cavallo, “Health, Air, and Material Culture in the Early Modern Italian Domestic Environment,” *Social History of Medicine* 29.4 (November 2016): 707–08, [dx.doi.org/10.1093/shm/hkw029](https://doi.org/10.1093/shm/hkw029).

5. Petronio, 301: “perche in quelli luoghi è sempre denso, grosso, & come acqua di paludi.”

6. Petronio, 301: “questo si purga da fuochi delle case, da suoni della campane, & si rompe.”

7. Petronio, 301: “Quando poi non soffia vento alcuno, l’aere della villa, & delle vigne è sempre più pericoloso, che quello della Città.”

8. Monica Green, “Bodies, Health, Gender, Disease: Recent Work of Medieval Women’s Medicine,” *Studies in Medieval and Renaissance History* 3.1 (2005): 12–17.

quality could change quickly and was highly localized.⁹ What were thin, clear, and clean airs could easily become thick, polluted, and sickly. Moreover, as Petronio noted, good and bad airs were the result of combined environmental factors and human practices—shifting seasons, urbanization, and daily human activities. The maintenance of good air thus required consistent attention and necessitated a series of practices that were deeply sensory in nature. Particularly revealing are Petronio's descriptions of the smells and sounds employed in the pursuit of clean airs: fragrant smoke and fires and sonorous bellringing.

Recent studies on health and environmental history have shown that early modern Europeans were keenly focused on “diseased landscapes.”¹⁰ Sandra Cavallo and Tessa Storey have also noted how late sixteenth-century health regimes reflected a “heightened awareness of the need to protect oneself from various environmental conditions.”¹¹ As a result, a culture of prevention emerged in the sixteenth and seventeenth centuries, marked by the proliferation of printed health manuals that offered detailed advice on how to navigate the climate and landscapes, and to procure health. Air quality was a key focus in many of these publications; health writers often gave particular emphasis to the sounds and smells associated with air quality. However, few studies have examined the attending early modern sensory practices. Moreover, while scholarship on stench and perfume has shown how smell and miasma was fundamental to conceptions of polluted air, sonic purification practices like the bellringing Petronio referenced remain unstudied.¹²

This article analyzes the sensory history of air pollution in sixteenth- and seventeenth-century Italy. Italians relied on a robust set of sensory practices to actively shape their environments in the pursuit of good air, while a contrasting series of sensory productions were understood to pollute the air. Sense-based

9. Maria Conforti, “Neapolitan Airts: Health Advice and Medical Culture on the Edge of a Volcano,” in *Conserving Health in Early Modern Culture: Bodies and Environments in Italy and England*, ed. Sandra Cavallo and Tessa Storey (Manchester: Manchester University Press, 2017), 136 and 144.

10. Lori Jones, “The Diseased Landscape: Medieval and Early Modern Plaguescapes,” *Landscapes* 17.2 (2016): 109, dx.doi.org/10.1080/14662035.2016.1251102.

11. Cavallo and Storey, *Healthy Living*, 70.

12. Holly Dugan, *The Ephemeral History of Perfume: Scent and Sense in Early Modern England* (Baltimore: Johns Hopkins University Press, 2011); Evelyn Welch, “Perfumed Buttons and Scented Gloves: Smelling Things in Renaissance Italy,” in *Ornamentalism: The Art of Renaissance Accessories*, ed. Bella Mirabella (Ann Arbor: University of Michigan Press, 2011), 19–21; Cavallo, 709–16.

conceptions of air quality reflected the highly localized nature of early modern environmental practice. According to prevailing knowledge, air quality could change quickly and could differ from day to day, season to season, and with the near-constant threat of plague-riddled airs cropping up in urban areas. Likewise, air quality could differ drastically according to locale: a floor in house, a particular part of town, and the urban and rural boundary could all facilitate differing air qualities. As Alexandra Logue reveals in her study on stench in London, concerns about air pollution and the senses were also exacerbated by population growth in many early modern centres.¹³ Urban density, cramped living quarters, and underdeveloped infrastructure all fueled fears about “bad airs.” Faced with the intense mutability of air, early modern Italians relied on sounds and smells to manage these shifts. First, I analyze the sonic tools urban Italians employed to cleanse polluted airs. The sounds associated with pure and polluted airs made up an important part of the urban soundscape and reveal interconnected social, sensory, and environmental histories. Considering sonic histories of air contributes an important new dimension to recent studies on early modern soundscapes as well as recent works on the aesthetics of good air and healthy environments in Renaissance Italy.¹⁴ Next, I examine how smells were understood to either cleanse or pollute airs. Italians employed carefully outlined olfactory regimes to navigate perceived shifts in air quality that resulted from seasonal changes and particular micro air-zones: rooms, homes, and the airspace that immediately surrounded an individual. The sensory practices associated with air quality had profound social implications, and class dynamics fundamentally patterned conceptions of good air. The final section of this article considers how class determined access to clean air and examines how particular socioeconomic groups were labelled as air polluters. Analyzing the sonic and olfactory histories of air offers a new perspective on pre-modern environmental experience, revealing the robust social, sensory, and health practices that developed as early modern Italians attended to their airs.

13. See Alexandra Logue’s article in this special issue: “‘Saucy Stink’: Smells, Sanitation, and Conflict in Early Modern London.”

14. Frances Gage, “Chasing ‘Good Air’ and Viewing Beautiful Perspectives: Painting and Health Preservation in Seventeenth-Century Rome,” in Cavallo and Storey, ed., *Conserving Health*, 237–38; Jodi Cranston, *Green Worlds of Renaissance Venice* (University Park: Pennsylvania State University Press, 2019), 16–17, 42–43.

Cleansing and polluting sounds

The physician and botanist Castore Durante prescribed a wide range of healthy-living practices in his popular 1586 text *The Treasure of Health*. Above all, Durante asserted the fundamental importance of “good airs.”¹⁵ He explained that “temperate air, that which is clean, clear, and pure, not only determines health but also conserves it [...] prolonging life, and slowing old age.”¹⁶ By contrast, he explained that “gloomy and thick airs darken the heart, disturb the mind, aggravate the body, slow down digestion, and accelerate old age.”¹⁷ Alongside the implications for individual well-being, prevailing beliefs about air quality also patterned public health and played a key role in plague and pandemic. In 1629, Fulvio Giubetti, a magistrate for Florence’s Office of Health, published a short text on the plague. He explained that “plague is a contagious illness born from infected air [...] or rather the plague is a poisonous vapour, concentrated in the air, [and the] enemy of the vital spirit.”¹⁸ As a result of the individual and public health concerns about air, the litany of health manuals published during this period often devoted careful attention to issues of “good” and “bad” airs.

Early modern experts on air were primarily influenced by the “re-discovery” of Hippocrates’s *Airs, Waters, Places*, published in Latin in 1525 and quickly circulated throughout Europe.¹⁹ According to Hippocratic theory, a series of intersecting factors determined air quality: the direction and origin of certain winds, the shifting seasons, the quality and presence of clouds, and

15. Castore Durante, *Il tesoro della sanità nel quale si da il modo da conservar la sanità, & prolungar la vita & si tratta della natura de cibi, e dei rimedii de i nocumenti loro* (Rome: Francesco Zannetti, 1586), 2: “buono Aere.”

16. Durante, 3: “l’Aer temperato, che è quello che è chiaro, lucido, & puro, che egli non solamente fa la sanità, ma la conserva ancora, chiarificando tutti gli spiriti, & il sangue, rallegra il cuore, & le mente, corrobora tutte l’attioni, sollecita la digestion in tutti I membri, conserva il temperamento, prolunga la vita, ritardando la vecchiezza.”

17. Durante, 3: “l’Aere tenebroso, & grosso, offusca il cuore, conturba la mente, aggrava il corpo, ritarda la concottione, & accelera la vecchiezza.”

18. Fulvio Giubetti, *Il cancelliero di sanità cioè notizie di provisioni è cose concernenti la conservazione della sanità contro il contagio della peste cavate da suoi authori* (Firenze: Zanobi Pignoni, 1629), 3: “Che la Peste e un male contagioso cagionato da infezzione d’aria [...] o vero che la Peste e un vapore velenoso, concreto nell’ aria, inimico dello spirito vitale.”

19. Cavallo and Storey, *Healthy Living*, 78.

whether the air was infected by localized “vapours from lakes, ponds, swamps, caverns,” or other landscape features.²⁰ In particular, density and temperature were key in determining air quality. Thin air was always healthier than thick air, and temperate airs were always healthier than dangerously hot and muggy or cold and humid airs. Individual and public health relied on navigating this complex web of intersecting factors that produced various air qualities.

When the air became dangerously thick, Italians used sonic tools to thin and disperse polluting haze. Prescriptive writings highlighted bellringing and artillery firing as particularly effective sonic purifiers. In a 1602 health manual for Genoese residents, the Veronese physician Bartolomeo Paschetti noted how urban spaces were marked by “the sound of bells [...] that lighten and purify the air.”²¹ Paschetti asked if the air would “not then be better and more thin in the city than in the country villas” where these sensory practices were less common.²² Ultimately, Paschetti boasted that “because the air of Genoa and nearby places is completely thin, light, and pure, in that country there is no reason for [cleansing] fires and for the sound of bells, nor for the comparison made of the villa to the city.”²³ Paschetti’s flattering description of Genoese air is characteristic of an emphasis on regionalism common to many prescriptive health writings from the period. Authors like Paschetti used health manuals to assert their expertise and to praise the particular region to which they dedicated their works.²⁴ This regionalism and environmental patriotism was contrasted by the generalized knowledge and practices advised in many health manuals, infusing these writings with elements of both localism and universalism.

Indeed, despite the early modern emphasis on the localized nature of air quality, a shared set of sonic practices were employed to cleanse urban airspace

20. Durante, 2: “da vapori di laghi, stagni, paludi, caverne”; Hippocrates, *Ancient Medicine. Airs, Waters, Places. Epidemics 1 and 3. The Oath. Precepts. Nutriment*, trans. W. H. S. Jones, Loeb Classical Library 147 (Cambridge, MA: Harvard University Press, 1923), 71–85.

21. Bartolomeo Paschetti, *Del conservare la sanità e del vivere de’ Genovesi* (Genoa: Giuseppe Pavoni, 1602), 128: “del suono delle Campane [...] che rischiarano, & purificano l’aria.”

22. Paschetti, 128: “non sarà egli miglior, & più sottile aere nella Città, che nelle ville?”

23. Paschetti, 129: “ma perche l’aere di Genova, & dei luoghi vicini egli è tutto sottile, laggier, & puro, non vale in quella Patria la ragione detta dei fuochi, & del suono delle campane, ne il paragone fatto delle ville alla Città.”

24. David Gentilcore, *Food and Health in Early Modern Europe: Diet, Medicine and Society, 1450–1800* (London: Bloomsbury Academic, 2016), 78.

throughout Italy. These practices were particularly important during times of plague when “infected air” was thought to envelop cities, wreaking havoc. In 1630, when northern Italy was victim to a devastating plague that moved throughout the region over the course of several years, the medic Tomaso Thomai published a plague and health manual in Bologna and described how “the sound of bells is a most convenient remedy, because the noise of bells dissolves the haze and clears the air.”²⁵ The physician Fabritio Ardizzone referenced similar practices in his 1656 text *On the Preservation and Curing of Pestilence*. Ardizzone warned that when urban populations “inhale polluted winds, it is prescribed to close up all windows, raise up the city gates, fire the artillery, and sound the bells.”²⁶ Ardizzone’s text was published in Genoa and dedicated to the city in 1656 when it was besieged by a plague that claimed approximately fifty-five thousand lives from a population of around seventy-three thousand.²⁷ Writings from 1656 show that the Genoese put these sonic recommendations into practice, attempting to drive away plague-riddled airs with a city-wide symphony of resounding sounds. According to Luca Assarino, editor of the seventeenth-century newspaper *Genova*, “in all the churches of Genoa everyone continued to sing at the same hour alongside the universal roar of all the bells, and then all of the artillery throughout the city and every vessel of the port responded as a second choir.”²⁸ In Naples, Giambattista Della Porta, a polymath whose publications ranged from works on alchemy to stage

25. Tomaso Thomai, *Discorso del vero modo di preservare gli huomini dalla peste di Tomaso Thomai medico da Ravenna* (Bologna, 1630), 8–9: “Il suono ancora delle campane [...] esser convenientissimo rimedio, perché dal rumore di quelle si dissolvono le nubi, e sichiarisica l’aria: onde s’è molte volte veduto le grandissime tempeste, in un’ instate per il suono delle campane essersi quietate”; Carlo M. Cipolla, *Fighting the Plague in Seventeenth-Century Italy* (Madison: University of Wisconsin Press, 1981), 51.

26. Fabritio Ardizzone, *Ricordi di Fabritio Ardizzone fisico intorno al preservarsi e curarsi dalla peste* (Genoa: G. Maria Farroni, 1656), 26–27: “ove inspirano i venti ammorbati, ordinare che sichiudano le finestre, che s’alzino le mura, si sparino artiglierie, suoni di campane.”

27. Carlo M. Cipolla, “The Plague and the Pre-Malthus Malthusians,” *Journal of European Economic History* 3.2 (Fall 1974): 279.

28. Romano da Calice, *La grande peste: Genova 1656–1657* (La Spezia: Cooperativa di solidarietà sociale Egidio Bullesi, 1992), 80: “e seguendosi a cantare nella medesima hora in tutte le chiesa di Genova col rimbombo universal di tutte le campane; l’artiglieria di tutti li posti della città e tutti i vascelli del porto rispose come secondocoro.”

plays, also discussed the sonic and environmental impact of bells and artillery.²⁹ In Della Porta's 1562 text *On the Miracles of Nature*, he dedicated a section to "when you want to drive away a storm or hail" and explained "of course, bells can do this with their ringing, or even the barrels of artillery, because they break the air with that roar and break up the clouds, which many people think should also be done at the time of plague."³⁰ Throughout Italy, health writers, philosophers, and urban populations collectively drew upon the power of sound in the battle against infected air.

While some sounds cleansed, others polluted. Air pollution and noise pollution were often expressed as interchangeable phenomena, and conceptions of social and environmental contamination remained inextricably linked. A 1577 treatise titled *Causes and Remedies of the Plague and of other Illnesses*, anonymously printed in Florence and dedicated to Grand Duchess Joanna of Austria, claimed that "dishonest gatherings, madrigals, vile songs [...] and inappropriately intimate conversations" all had the power to prompt plague-infested airs.³¹ These "vile" sounds were social in nature and reflect how boundaries of class and honour deeply conditioned distinctions between purifying and polluting sounds.³² For example, sixteenth- and seventeenth-century Florentines regularly complained about the "dishonest words, noises, and extraordinary shouting" created by the city's women sex workers and described themselves as "disturbed and bothered," "defiled," and "scandalized" by these sounds.³³ Spiritual writers

29. Paolo Piccari, *Giovan Battista Della Porta: Il filosofo, il retore, lo scienziato* (Milan: FrancoAngeli, 2007), 21–23.

30. Giambattista Della Porta, *De i Miracoli et maravigliosi effetti dalla natura prodotti Libri III* (Venice: Lodovico Avanzo, 1562), 87: "Quando vorrai scacciare la tempesta, ò la grandine [...] Piu naturalmente il possano fare le campane, con il lor sonare, o pur le botte dell' artiglieria, percioche rompano con quell strepito l'aria, e rompano le nugole, laqual cosa molti pensano che si debbi fare ancho al tempo della peste: accioche le nugole troppo lente non si fermino."

31. *Cause et rimedii della peste, et d'altre infermità* (Firenze: i Giunti, 1577), 29: "dishonesti ragionamenti i Madrigali, et canzioni infami [...] il conversare insieme con indecent familiarita."

32. Hillel Schwartz, "On Noise," in *Hearing History: A Reader*, ed. Mark Michael Smith (Athens: University of Georgia Press, 2004), 52.

33. Archivio Arcivescovile di Firenze (hereafter, AAF), Cause Criminale, "Firenze S. Onofrio di Fuligno – sec XVII." no. 1: "parole dioneste, rumori, et grida straordinari." Archivio di Stato di Firenze (hereafter, ASF), Auditore. 4896, fol. 128: "sono grandamente disturbate et molestate." AAF, Cause Criminale, "Firenze S. Onofrio di Fuligno – sec XVII", no. 1: "restar maculate." AAF, CC, 34.5, 7, nf: "grande scandolo." See Julia Rombough, "Noisy Soundscapes and Women's Institutions in Early Modern

warned against the profound physical power of “immoral” sounds. Onofrio Zarrabini, an Augustinian priest from Cotignola, explained that “just as our body has five senses, there are five windows through which death enters into us, this happens when these windows are not well closed, locked, and guarded with diligence.”³⁴ Efforts to contain “scandalous” sounds were efforts to identify and discipline “scandalous” individuals, and environmental, social, and religious conceptions of “filth” were inextricably entwined.³⁵ These socio-sonic strategies were complemented by medical, scientific, and cultural assertions about the physical and environmental power of sound. Amy Bloch has revealed the emphasis on depicting sound-filled airs as a tangible force in Renaissance artworks, and musicology studies have revealed how melody and song were understood to deeply impact the air and an individual’s bodily and spiritual state.³⁶ However, few studies have fully considered the intense materiality and power of sound beyond music in early modern cultures of health.

Pealing bells, roaring artillery, and “illicit sounds” all had the ability to either cleanse or pollute the air because of the intimate relationship between sound and air. While some early modern writers debated the specifics of what exactly sound was and how it functioned, the majority agreed that sound was manipulated air. Bartolomeo Traffichetti, a physician and philosopher from Rimini, drew directly from Aristotelian thought to explain the mechanics of

Florence,” *Sixteenth Century Journal* 50.2 (2019): 460–63, and Nicholas Terpstra, “Sex and the Sacred: Negotiating Spatial and Sensory Boundaries in Renaissance Florence,” *Radical History Review* 121 (2015): 76–77, dx.doi.org/10.1215/01636545-2799962.

34. Onofrio Zarrabini, *Delle materie e de soggetti predicabili* (Venice: Battista Somascho, 1586), 373: “Come il corpo nostro ha cinque sense, che sono cinque fenestre; per le quali entra lamorte in noi; quando egli avviene, che non siano ben chiuse, ferrate, & custodite con diligenza.”

35. Alessio Assonitis, “Fra Girolamo Savonarola and the Aesthetics of Pollution in Fifteenth-Century Rome,” in *Rome, Pollution and Propriety: Dirt, Disease and Hygiene in the Eternal City from Antiquity to Modernity*, ed. Mark Bradley with Kenneth Stow (Cambridge: Cambridge University Press, 2012), 141–42, dx.doi.org/10.1017/CBO9781139028479.012; David Gentilcore, “Purging Filth: Plague and Responses to It in Rome, 1656–7,” in Bradley with Stow, ed., *Rome, Pollution and Propriety*, 154–56, dx.doi.org/10.1017/CBO9781139028479.013.

36. Amy R. Bloch, *Lorenzo Ghiberti’s Gates of Paradise: Humanism, History, and Artistic Philosophy in the Italian Renaissance* (Cambridge: Cambridge University Press, 2016), 214–15, dx.doi.org/10.1017/CBO9781316162842; Remi Chiu, *Plague and Music in the Renaissance* (Cambridge: Cambridge University Press, 2017), 86–93, dx.doi.org/10.1017/9781316271476; Bonnie Gordon, *Monteverdi’s Unruly Women: The Power of Song in Early Modern Italy* (Cambridge: Cambridge University Press, 2004), 21.

sound in his 1565 text *The Art of Preserving Health*, writing “sound is the fracture of air made from hard bodies, [and these] air waves, having been fractured and broken up, move around [circulating and producing sound].”³⁷ Bells were prime examples of the types of “hard bodies” that could fracture the air and were thus considered particularly pure in their sounds and therefore particularly effective at dispersing polluting haze. Altering the soundscape was understood to alter the airspace, for better or for worse. The sonic reverberations of ringing bells and cracking artillery carried a unique environmental power and were vital tools in the pursuit of clean air. Sound-filled airs rippled through space and were characterized by a physicality that extended far beyond their seemingly ephemeral and immaterial nature.

The sounds associated with air quality contributed an important register to the multi-layered soundscapes that composed early modern Italian cities. In particular, these sounds bring a new focus to the historical importance of bells. For early modern Italians, daily life was regulated and experienced according to the predictable ringing of bells, what Niall Atkinson has termed the city’s “sonic armature.”³⁸ Bells ordered the day, oriented individuals in space and time, and marked life and death. In his study of nineteenth-century French bellringing, Alain Corbin discusses “the intense power of the bell to evoke [...] and to consolidate an individual’s identification with a primordial auditory site.”³⁹ Dolly Mackinnon has highlighted how “early modern ears picked up the subtleties of religious, political, and gender differences that resonated in the selection of a bell or bells, and the way in which they were rung.”⁴⁰ In diverse contexts the layered and strategic ringing of bells communicated a complex series of social messages. Bells also communicated complex environmental messages, and an analysis of bells as air purifiers contributes an important new element to examinations of early modern soundscapes.

37. Bartolomeo Traffichetti, *L'Arte di conservare la sanità* (Pesaro: Gieronimo Concordia, 1565), 183: “suono e frattione del l'aere, fatta da noi corpi duri, onde l'aere fratto e spezzato si move in giro [...].”

38. Niall Atkinson, “Sonic Armatures: Constructing an Acoustic Regime in Renaissance Florence,” *The Senses and Society* 7 (2012), 39–52, dx.doi.org/10.2752/174589312X13173255802030.

39. Alain Corbin, *Village Bells* (London: Papermac, 1999), x.

40. Dolly MacKinnon, “The Bell, Like a Speedy Messenger, Runs from House to House, and Ear to Ear: The Auditory Markers of Gender, Politics and Identity in England, 1500–1700,” in *Sound, Space and Civility in the British World, 1700–1850*, ed. Bruce Buchan, Peter Denney, and Karen Crawley (London and New York: Routledge, 2019), 66.

The soundscapes of air pollution also attune us to the history of emotions and lived experiences of early modern airs and the environment. When cities were afflicted by caustic airs and plunged into plague-time, regular sonic rhythms were disrupted and cities were marked by meaningful silences and the sounds of emergency. Tolling bells continued to sound out, but their function, timing, and significance all shifted in the face of public crisis. Repeated ringing from multiple bell towers and firing cannons and artillery evoked and reflected the fear and the collective action that gripped cities suffering from air pollution and pandemics. The soundscapes of air pollution and pandemic were also marked by unusual silences. For example, an *avviso* from Rome in October 1575 carried news of a plague outbreak in Mantua. The letter described “that many had died of plague there, and Mantua had hired five *pizzamorti* [body clearers ...] and they bury a great number of people by night without the sound of bells.”⁴¹ In normal times, an individual’s death was often marked by the solemn tolling of a bell, a practice that communicated the deceased’s social position according to the type of bell used, its location, and how long it rang out for.⁴² In times of plague, when casualties climbed exponentially, these sounds of mourning were often absent and replaced instead by the eerie sounds of body clearers who carried away the deceased and signalled their presence by wearing small bells around their legs that jingled as they moved. According to Jane Stevens Crawshaw, body clearers were mandated to wear these bells by city officials as “distinguishing signs,” signalling the presence of these marginal individuals who did the dangerous and socially maligned work of handling the infected dead.⁴³ Clothing and sumptuary laws were pervasive throughout late medieval and early modern Italy, and other “polluting” social groups like women sex workers were likewise occasionally required to wear bells, signalling their presence with

41. The Medici Archive Project (Hereafter, BIAMAP), Doc ID# 26760, ASE, 4026, fol. 458: “che ci erano morti molti di peste, ch’è Mantova havevano salariati cinque pizzamorti a XV scudi il mese et che si sepelivano di gran gente la note senza suono di campane.”

42. Abigail Brundin, Deborah Howard, and Mary Laven, *The Sacred Home in Renaissance Italy* (Oxford: Oxford University Press, 2018), 90, dx.doi.org/10.1093/oso/9780198816553.001.0001.

43. Jane Stevens Crawshaw, “The Beasts of Burial: *Pizzigamorti* and Public Health for Plague in Early Modern Venice,” *Social History of Medicine* 24.3 (December 2011): 580; Diane Owen Hughes, “Distinguishing Signs: Ear-rings, Jews, and Franciscan Rhetoric in the Italian Renaissance City,” *Past & Present* 112 (1987): 24–27, dx.doi.org/10.1093/past/112.1.3.

a distinctive ringing as they moved through city streets.⁴⁴ These distinguishing signs also functioned as distinguishing sounds, and early modern ears would have registered the overlapping social and environmental notions of pollution that bells of various types, small and large, communicated. Taken together, the sounds associated with air pollution offer a new perspective on the embodied sensory experience of early modern urban living. Bells, artillery, concerns about polluting noises, frightening silences, and the distinguishing sounds of marginal individuals were all part of the urban pursuit of “good airs.” These sounds contributed to the larger soundscape and simultaneously reflected and shaped urban experience.

Cleansing and polluting smells

Air temperature was another critical factor in determining air quality. The praised thirteenth-century physician Arnaldo di Villanova, whose works continued to inspire sixteenth- and seventeenth-century writers, explained that “corrupted” airs resulted “when the air exceeds in heat or frigidity, dryness or humidity.”⁴⁵ Domenico Panarolo, a Roman physician and herbalist, likewise outlined the interconnected relationship between air density, air temperature, and the senses in his 1642 text, *Aerologia*, writing: “in order to render air to a suitable state, this rule must be observed: if it is thick, thin it, if it is hazy or foggy, lighten it, if it smells bad, scatter odiferous things, if it is hot, cool it.”⁴⁶ While sounds stood to thicken or thin the air, smells were understood to variously cool or heat, dry or dampen the air. Pollution abatement thus relied on the careful application of particular fragrances and the censoring of polluting smells that were thought to prompt miasmatic vapours.

44. Carole Collier Frick, *Dressing Renaissance Florence: Families, Fortunes, and Fine Clothing* (Baltimore: Johns Hopkins University Press, 2002), 184–85.

45. Arnaldo di Villanova, *Opera utilissima di Arnaldo di Villa nuova di conservare la sanità, pur hora tradotta di latino in buona lingua Italiana* (Venice: Michele Tramezino, 1549), 106: “quando l’aria eccede in calidita & frigidita, ò siccita, ò humidita, e quando accade putrefattione, et corrottione venga.”

46. Domenico Panarolo, *Aerologia cioè discorso dell’aria trattato utile per la sanità* (Rome: Domenico Marciani, 1642), 86: “Nell’aere per ridurlo a stato conveniente, si deve osservare questa regola, cioè, se egli è grosso, assottigliarlo, se torbido, ò caliginoso, schiarirlo, se de cattivo odore, sparger cose odorifere, se caldo rinfrescarlo.”

Health manuals instructed readers on a variety of olfactory practices for cleansing the air, all rooted in Hippocratic-Galenic humoral theory. Humoral theory held that all ingredients possessed an inherent set of properties rendering them either hot or cold, wet or dry.⁴⁷ According to this classical theory, humoral balance in both the body and the environment was critical to health, and imbalances could be rectified by infusing the body or environment with carefully chosen ingredients that contained the necessary properties. Overheated humid airs could therefore be cooled and dried by infusing them with carefully chosen ingredients. For example, Panarolo recommended dousing rooms with vinegar, a dry and cool ingredient, because “vinegar is very good for cooling [air that is too hot].”⁴⁸ Similarly, he advised that it is “most useful to spread cooling herbs or flowers such as roses, violets, and water lilies, and other similar varieties which with their coldness will partly diminish the hotness of air.”⁴⁹ Like sounds, smells injected themselves into the air and fundamentally altered the ambient environment.

The application of air-purifying scents was seasonally specific. Attention to the seasonal variations in air quality was articulated in some of the earliest vernacular health manuals, like those attributed to Ugo Benzi, a fifteenth-century professor of philosophy and medicine and physician to the Duke d’Este.⁵⁰ A 1618 re-printing of Benzi’s popular text, *Rules on Health*, explained that “pure air is always tempered according to the unique qualities of the different time of year.”⁵¹ Benzi therefore recommended his readers use scents to “purge rooms” of bad air and advised that “if it will be during the summer season, or even in the spring or autumn, scatter the room with fresh herbs that do not have great humidity and wateriness.”⁵² Durante offered more seasonally

47. Gentilcore, *Food and Health in Early Modern Europe*, 18–21.

48. Panarolo, 87: “e l’aceto ancor esso è bonissimo per refrigerare.”

49. Panarolo, 89: “sarà ancora ultimissimo spargere herbe refrigeranti o fiori come sono rose, viole, ninfee, foglie di Lattuca di Vite [...] e simili, quali con la sua frigidezza rimettono in parte la calidità dell’aere.”

50. Cavallo and Storey, *Healthy Living*, 17.

51. Ugo Benzi, *Regole della sanità et della natura de cibi. iu Ugo Benzo medico & filosofo sanese. Con le annotazioni di Giovanni Lodovico Bertaldi medico delle serenissime altezze di savoia* (Giovanni Domenico Tarino: Torino, 1618), 5: “[...] d’ogni tempo l’aria pura, e secondo la diversità de tempo dell’ anno temperata nelle proprie qualità.”

52. Benzi, 6–7: “purgate le stanze, se sarà in tempo de estade, ò vero in tempo di primavera, ò vero dell’ autunno spargersi per le stanze delle herbe fresche, che non habbino grande humidità, & acquosità.”

specific advice in *The Treasure of Health*. In a section “On Airs,” Durante advised his readers that if “they carry odiferous things in their hand” to cleanse the air, “in the summer [it should be] a sponge bathed in rose water and rose vinegar and scented often” but “in the winter [it should be . . .] a sponge uninfused with vinegar and into which cloves and zedoary [white turmeric] are macerated.”⁵³ Frigid winter airs did not need to be further chilled by vinegar or cooling florals and benefited instead from the warming effects of certain spices and herbs. Durante further recommended:

if [the air] is too hot and it is during the summer, sprinkle the house with *aqua fresca* and vinegar, because the vinegar with its frigidity and dryness corrects the bad vapours of the air and prohibits further putrefaction. [. . .] But if the air is too cold and the wind blows, particularly the [northerly winter] Boreal wind, sprinkle hot herbs throughout the room like mint, pennyroyal, sage, hyssop, laurel, rosemary, and marjoram.⁵⁴

Scent-soaked sponges were one of many objects Italians used to disperse air-cleansing scents. Sandra Cavallo has examined the material cultures associated with early modern air including the pomanders, scent-burners, and the various flasks that became increasingly popular in sixteenth-century Italy.⁵⁵ Together, these material and immaterial cultures are evidence of the consistent attention early modern Italians gave to highly localized variations in air quality. The characteristic smells of astringent vinegar, florals, spices, and woody herbs marked passage through the year, both responding to and signalling seasonal shifts in air quality.

Scenting practices also reflect the highly individualized and tailored nature of domestic environmental practice in sixteenth- and seventeenth-century Italy. Urban and domestic airs were thought to be composed of a series of

53. Durante, 9: “Si portino in mano cose odorate, la state una spogna bagnata in acqua rosa, & aceto rosato, e sòdori spesso. [. . .] L’inverno si porti una spogna infusa in aceto nel qual sian macerate garofani, & zedoaria.”

54. Durante, 3–4: “Onde se sarà troppo caldo, & di state si asperga la casa di aqua fresca & aceto, perche l’aceto con sua frigidità & siccità correggei cattivi vapori dell’Aere, & prohibisce la putredine. [. . .] Ma se l’aere sarà troppo frigido, si fugga il vento, massime il Boreale & si spargan per la stanza herbe calide, come menta, pulegio, salvia, hissopo, lavro, rosmarino, & maiorana.”

55. Cavallo, 715.

micro-zones, and health writers were clear that alongside seasonal shifts, air quality could differ dramatically depending on the location of a house or apartment, different floors in a building, and the size of a room. Durante advised that it was generally best to frequent upper-floor rooms “to breath air that is thinner and purer” compared to lower-level rooms.⁵⁶ Other manuals directed readers to switch their living quarters according to seasonal shifts in air quality, occupying smaller, lower levels in the winter and larger, open rooms in the summer.⁵⁷ Healthy living required attention to the constant seasonal, temporal, and spatial changes in air quality, and tailored scents allowed Italians to manipulate their environments to navigate the highly mutable airs they encountered on a daily basis.

Smells could also pollute the air.⁵⁸ In 1622, the Florentine Office of Sanitation forwarded new health ordinances in an effort to avoid plague and communicable illness. They declared: “in well-ordered places there are statutes and orders which prohibit the keeping of rubbish in the streets, squares and other places; since this rubbish tends to give off smells and stench which are so damaging to health.”⁵⁹ Health experts were clear that bad smells infected the air with deadly vapours and prompted plague.⁶⁰ Often, this stench was related to particular labour practices such as tanning, dying, butchering, silk production, and other odiferous trades.⁶¹ For example, in 1630 when northern Italy was gripped by plague, Florence’s Office of Sanitation decreed that “in streets and public places it is not lawful to make waste or filth nor to tan leathers.”⁶² Tanners

56. Durante, 7: “bisogna frequentar molto le stanze da basso, ma le più alte [...] a respirare l’Aere più sottile, & più puro.”

57. Benzi, 3; Deborah Howard, “Seasonal Apartments in Renaissance Italy,” *Artibus et Historiae* 22.43 (2001): 131–33, dx.doi.org/10.2307/1483657.

58. Jo Wheeler, “Stench in Sixteenth-Century Venice,” in *The City and the Senses*, ed. Jill Steward and Alexander Cowan (New York: Routledge, 2007), 25–30.

59. “Ordinance of the Florence Health Officers, 4 May 1622,” in *Miasmas and Disease: Public Health and the Environment in the Pre-Industrial Age*, by Carlo Cipolla, trans. Elizabeth Potter (New Haven: Yale University Press, 1992), Appendix A.

60. John Henderson, *Florence Under Siege: Surviving Plague in an Early Modern City* (New Haven: Yale University Press, 2019), 50–53, dx.doi.org/10.2307/j.ctvk8w059.

61. Henderson, 58.

62. Giubetti, 21: “che nelle strade e luoghi pubblici non sia lecito buttare ne fare immondezze non conciar pelle.”

soaked animal skins in vats of noxious biomaterials to strip hair from hide. Dried acorn cups from myrtle tree leaves and lime mortar were key ingredients; urine was also a commonly used astringent in the process. This extremely pungent work took days, and soaking leathers then needed to be stretched and air dried for long periods. During times of plague, when cleansing the air and halting sensory pollution was paramount, tanners came under particular scrutiny for the smells their work produced. Other civic laws similarly sought to regulate the smellscape beyond plague-times, a practice that continued well into the eighteenth century. One such Florentine law from 1720 was carved into stone and publicly posted in the city's eastern working-class district of Santa Croce, where tanners and dyers had lived and worked throughout the sixteenth, seventeenth, and eighteenth centuries. The inscription proclaimed that "leather and hide tanners of any sort cannot keep myrtle leaves, lime or other materials in the streets for longer than four days under penalty of 25 *lire*."⁶³ Much like in the case of noisy women sex-workers, Italians used sense-based conceptions of air quality to link pollution and particular labour groups. While not as marginalized as sex work, tanning was nonetheless an undesirable trade. Hard labour and putrid odours made it unwelcome work for many, and those who performed this work belonged to the working classes. Concerns about polluting smells and sounds blended social and environmental conceptions of "cleanliness," and socioeconomics fundamentally patterned beliefs about air quality. The boundaries that separated "good" and "bad" airs, sounds, and smells ran parallel to the boundaries that separated the rich from the poor.

Class and access to clean air

In Giovanni Battista Baliano's 1653 *Treatise on the Plague*, the physicist and close correspondent of Galileo sought to address why "the poor surrender more to pestilential infection than the rich."⁶⁴ According to Baliano, this was because the poor were exposed to polluted airs more frequently than the

63. Gian Rosa, *Le Leggi Penali sui Muri di Firenze* (Florence: Casa Editrice Nerbini, 1911), 86: "per sentenze degli illustrissimi signori capitani di parte del 2 ottobre 1720 fu proibito ai conciatori di pelle e cuoi d'ogni sorte il non potere e tenere nelle strade pubbliche mortelle calcine ne altre materie più di giorni 4 in pena di lire 25."

64. Giovanni Battista Baliano, *Trattato della pestilenza ove si adducono pensieri nuovi in più materie* (Benedetto Guasco: Genoa, 1653), 183: "I poveri soggiacciono più all'infettione pestilente, che I ricchi."

wealthy. Moreover, Baliano claimed that the unsanitary living conditions of the poor encouraged the production and spread of polluted airs.⁶⁵ He wrote that “the poor live in filthier homes and rooms; they keep their clothes and bodies fouler, and therefore the pestilential air withdraws into their possessions that are [more] disposed to putrefaction, and for this reason the poor receive infection more easily.”⁶⁶ Baliano’s sweeping assumption that the bodies, homes, and possessions of the poor were universally “filthy” and “foul” reflects the interconnected social, class, and environmental inequities that shape histories of air. In Baliano’s estimation, the very presence of the “poor” prompted bad airs. Moreover, the “filthy” sounds, smells, and vapours the working poor were said to produce as they lived and laboured explained why air quality could shift dramatically in various parts of the city. Baliano asserted that

although plague originates from the air, not all parts of the city feel the same damage but only those places where the most corruption is found; that is, where there is more filth and more materials apt to putrefy and produce pestilent vapour; hence those places that are kept clean and without such materials are exempt from infection and easily conserved.⁶⁷

Lurking behind Baliano’s claim that urban spaces free of polluting “materials” conserved pure air more easily was the tacit assumption that areas free of polluting socio-economic groups and the poor likewise conserved pure air more easily. In early modern Italy the urban poor were collectively labelled as environmental actors who were responsible for, and suffered disproportionately from, air pollution. Analyzing the links between class, sense, and air pollution reveals how socioeconomics fundamentally shaped environmental experience.

65. Nicholas A. Eckstein, “Florence on Foot: An Eye-Level Mapping of the Early Modern City in Time of Plague,” *Renaissance Studies* 30.2 (April 2016): 286–87, dx.doi.org/10.1111/rest.12144.

66. Baliano, 183: “I poveri habitano in luoghi e stanze più sporche; tengono più succide le proprie vesti, e le proprie persone; onde l’aria pestilente ritruova in loro materia disposta alla putredine; e perciò essi più agevolmente ne ricevono l’infezione.”

67. Baliano, 183: “la peste, ancorche habbia origine dall’aria, non perciò tutte le parti della Città ne sentono ugualmente il danno [...]. Ma solamente, ove ritruovi maggior corruttione; cioè ove sieno più brutture, e materie più atte à putrefarsi, e prodursene vapori pestilenti; onde quei luoghi, che sono tenuti puliti, e senza tali materie, agevolmente esenti si conservano.”

Wealth, power, and social capital afforded access to clean air and the sounds and smells that prompted clean air in a multitude of ways. In particular, access to country villas provided wealthy Italians a considerable environmental advantage compared to the urban poor. While urbanites could manipulate their surrounding air quality through the careful application of scents and sounds, most health experts agreed that fleeing the city altogether was the surest way to access clean air. Durante described how in the pursuit of good air it was “useful to spend time in the villa because just as the villa provides food to the city and the city consumes it, so too visiting the villa prolongs human life but with the business of the city, human life is shortened.”⁶⁸

Archival records reveal how elite ruling families like the Tuscan Medici regularly moved between the city and their various country retreats depending on perceived shifts in air quality. For example, in 1540 Maria Salviati de’ Medici, Duke Cosimo I de’ Medici’s mother, wrote to her daughter-in-law the duchess Eleonora di Toledo to inform her that both she and the young princess Maria were feeling well after having gone to the Medici Villa di Castello where she had bathed and taken in the good country air.⁶⁹ In a letter from November 1542, Duchess Eleonora di Toledo similarly advised her mother-in-law to take the young Medici prince and princesses to stay at the rural Badia Fiesolana monastery north-east of Florence, describing this as “a salubrious place for their health” free from “the very bad airs” of Florence.⁷⁰ The following year, in September 1543, the duchess wrote to her father, Don Pedro di Toledo, with news that Duke Cosimo I de Medici was recovering from fevers and on the advice of his doctor had left for Poggio a Caiano, the Medici villa west of Florence, to take in “this good air.”⁷¹ These letters attest to the active role women played in navigating air quality for themselves and their families. Sharon Strocchia has recently noted that both Maria Salviati and Eleonora di Toledo

68. Durante, 7: “E’utile parimente soggiornar tal’hora in villa, percioche si come la villa provede gl’alimenti alla Città, & la Città li consuma; così la vita humana col frequentar la villa si prolunga, ma [...] col negotio della città s’accorta.”

69. BIAMAP, doc ID# 18767, ASF, MAP, 345, fol. 364: “D’avantihieri andai a castello per vedere se dopo la doccia posso fare acquisto dell’aere, et per Dio gratia sto assai bene.”

70. BIAMAP, doc ID# 5941, ASF, MAP, 1170, fol. 149r: “contentezza non piccola della resolution fatta per la stanza loro all Badia di Fiesole, et si rallegra assai che se sia ritrovato un luogo salubre per la sanità loro”; “presente in Fiorenza, dove conoscie essere cattivissime aere.”

71. BIAMAP, doc ID# 19786, ASF, MAP, 5, fol. 321: “questo buono aere del Poggio.”

“exercised enormous influence over daily [health] care routines” at the Medici court despite the fact that “their medical agency has barely been explored” by historians.⁷² While essentially all published health manuals from the period were written by men, unpublished records attest to a daily reality where women put environmental knowledge into action for themselves, their families, and the court. Managing shifts in air quality was a key part of this practice.

Villa airs were considered healthy precisely because they were free of the caustic sounds and smells of the city. In Agostino Gallo’s popular 1556 dialogue on the values of living in the villa as opposed to the city, *The Thirteen Days of Agriculture*, the widely published agronomist wrote: “we cannot say enough that it is a health-giving thing to abandon [...] the noises of the city, in order to enjoy the reposes, the joys, and the contentments of the villa.”⁷³ Gallo’s sentiments were echoed by the Venetian poet Senofonte Bindassi who praised the peaceful countryside, writing: “in the villa one does not experience the many curses [...] scorns, resentments, the many frenzies [...] brawls [...] sighs, sobs [...] screams and screeches of so many who live in the cities of the world.”⁷⁴ Free from the caustic soundscape of the city, rural airs were not burdened by urban noises, nor by the working classes who produced these sounds as they lived and laboured. Instead, idyllic villa soundscapes were described as replete with “birdsong” and “music and songs,” sounds that both prompted and signalled healthy air.⁷⁵

Villa owners also had the privilege of ensuring that villa airs were cleansed with good smells prior to their arrival from the city. Advice attributed to Ugo Benzi directed villa owners that “it is a good thing that one day before [arriving at the villa] the air of their home is rectified with fire and fumigation with the aforementioned herbs, and scattered with the previously mentioned [odiferous]

72. Sharon Strocchia, *Forgotten Healers: Women and the Pursuit of Health in Late Renaissance Italy* (Cambridge, MA: Harvard University Press, 2019), 16, dx.doi.org/10.4159/9780674243446.

73. Agostino Gallo, *Le tredici giornate della vera agricultura & de piaceri della villa* (Venetia, 1556), 317: “non tanto possiamo dire che egli è cosa salutifera l’abbandonare gl’intrichi, i travagli, & rumori delle Città, per godere i riposi, le allegrie, & le contentezza delle ville.”

74. Senafonte Bindassi, *Il diporto della villa* (Venice: Giovachino Brognolo, 1582), 6: “in villa non si sentono tanti inganni, tante insidie, e agnati, tanti danni, tanti sdegni, e rancor, tanti furori, crudeli inimicitie, risse, affanni, singulti, pranti, urli, e stridori, in quanti vivono le città del mondo.”

75. Gallo, 287: “cantare de gli uccelli.” Durante, *Il Tesoro della sanità*, 52: “con suoni, & canti.”

things, and with spritzing of the same or similar ingredients.”⁷⁶ Benzi explained that “the reason for this is because the air of a *palazzo* or other home that has been closed up for a long time could have received an infection of a bad or putrid quality, therefore it would be good to have it purified before going [to the villa].”⁷⁷ Servants and staff would have been responsible for preparing the *palazzo* airspace, allowing the wealthy to avoid potentially sickly airs and shifting this perceived risk onto household staff instead. Thus, it was not only access to the villa that allowed wealthy Italians environmental privilege, but also access to the labour and services of the working classes who fumigated, spritzed the air, and scattered herbs on their behalf, preparing healthy sensescapes and airs for the rich.

The links between class, air quality, and the senses were explicitly acknowledged in a different manner by Domenico Panarolo in the final chapter of *Aerology*, titled “how the air is contaminated and how one should change it to lessen its imperfection.”⁷⁸ Like many health writers, Panarolo advised his readers to regularly burn incense or prepare perfumes in their living quarters. He advised “ordinary folk” to burn juniper, cypress, and rosemary.⁷⁹ These were relatively cheap, versatile, and readily available materials. He then outlined a separate list of ingredients reserved for “the nobility”: musk, ambergris, storax, benzoin, and seville orange or rose.⁸⁰ “Ordinary folk” would not have had access to expensive luxury ingredients like ambergris and storax, and Panarolo’s recommendations speak to how class shaped access to the medical marketplace.⁸¹

76. Benzi, 4–5: “è buona cosa un giorno Avanti sia retificato l’aria di sua habitatione col fuoco, e fussumigie fatto con le predetti legni, & con spargervi le prenominate cose & con l’istessa, ò simile irroratione.”

77. Benzi, 4–5: “la causa è che l’aria d’un palazzo ò altra habitatione, qual per longhezza di tempo sia stata serrata, facilmente hà potuto recever qualche infettione di cattive e putride qualità, perciò sarà bene avanti che andare, haverle purificate.”

78. Panarolo, 89.

79. Panarolo, 89: “si potranno far profumi nella stanza per le genti ordinarie di Ginepre, Cipresso, Rosmarino, incense.”

80. Panarolo, 89: “Per I nobili di Musco, Ambra, Storace, Belzoino, acqua di fior Melangoli, ò di Rose.”

81. William Eamon, “Pharmaceutical Self-Fashioning or How to Get Rich and Famous in the Renaissance Medical Marketplace,” *Pharmacy in History* 45.3 (2003): 125–27; Sophie Read, “Ambergris and Early Modern Languages of Scent,” *The Seventeenth Century* 28.2 (2013): 221, dx.doi.org/10.1080/0268117X.2013.792158.

This, in turn, shaped access to good air. As Panarolo explained, more expensive and rarified ingredients like ambergris and musk rendered perfumes “more odiferous” and therefore more efficacious in cleansing the air.⁸² Restricted access to these ingredients was yet another way in which socio-economics patterned environmental experience and sensory practices.

Ordinary folk, by contrast, often lived and worked at the epicentre of dangerous air zones. Tradespeople like tanners, body-clearers hired during times of plague, women sex workers, and the many urban working poor with their purported “screams and screeches” were part of a distinct early modern environmental and sensory class that lacked easy access to salubrious villa soundscapes and expensive air-purifying scents. Moreover, the working poor were held responsible for the “filth” and “foulness” that threatened urban air quality. Complaints about the shouts and “lewd words” of those who worked and socialized in urban spaces and concerns about the smells of “the poor” reflected a broader suspicion against the sensory productions of the working classes. Boundaries of class were made and marked by particular sounds and smells. This, in turn, made and marked the boundaries of health and environmental experience. Linked social and environmental concerns about “uncleanliness” were central to conceptions of air quality and served to distinguish particular groups of individuals and their sensory productions as “matter out of place.”⁸³ Simultaneously, however, the same boundaries that proclaimed the urban poor were “out of place” also served to fix these social groups in place—relegating the urban poor to particular urban spaces, industries, and sensescapes. The ability to escape to villas, to move seasonal living quarters, to hire musicians to play air-purifying harmonies, and to craft expensive perfumes all meant that the wealthy were more environmentally mobile and thus better equipped to navigate perceived sensory, seasonal, spatial, and pandemic induced shifts in air quality.

Early modern Italians were keenly focused on air quality and experienced air, health, and the environment as sensory categories. Urban Italians worked to actively shape their sensescapes with the pursuit of temperate thin airs in mind. This was an environmental practice defined by sounds and smells: ringing bells; roaring artillery; the astringent odour of vinegar; the woody

82. Panarolo, 89: “[...] e volendola far più odorifera, metterci dentro Ambra, Zibetto, ò Musco.”

83. Mary Douglas, *Purity and Danger: An Analysis of Concepts of Pollution and Taboo* (London: Routledge, 2002), 50.

smells of rosemary, cedar, and juniper; and the expensive scent of musk and ambergris. Printed health manuals and archival records reveal the careful and consistent attention early modern Italians paid to the nuances of air quality. At the individual and domestic level this meant crafting tailored and localized sensescapes, carefully scented rooms, idyllic villa soundscapes, and strategic movements between urban and rural environs. At the civic level, collective bellringing, artillery firing, and the active surveillance of “polluting” socio-sensory groups like sex workers and tanners all aimed to cleanse the air. Environmental and social practice were inextricably linked in the pursuit of “good air,” and class often determined environmental and sensory experience. In sixteenth- and seventeenth-century Italy, sounds and scents were powerful environmental agents that altered highly mutable airs. Faced with urban airs that were often “dense, thick, and like the water of swamps,” Italians relied on sounds and smells to alter airs in the pursuit of health.