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Whiffstory

Using Multidisciplinary Methods to Represent the
Olfactory Past

If an explosion occurs and no nose is there to sniff it, does it have a smell? The big bang unleashed a mix of matter that formed—and continues to form—the molecular building blocks of existence. Astrochemists and paleobiologists have illustrated that long before humans existed, before the ostensibly fateful Freudian moment when humans stood up on two legs and elevated their noses a few feet higher in the air than their quadrupedal relatives, a complex mix of odorous compounds were creating and transforming life on earth.¹

Among this molecular soup, a human nose would be able to discern the rotten-egg scent of hydrogen sulfide (H₂S) and the acrid burned-match stink of sulfur dioxide (SO₂). On earth, these odors emerged from erupting volcanoes and oceans of blooming bacteria. They were among the signature scents produced by transformations in land, air, and water that would in turn lead to the emergence, adaptation, and extinction of the life-forms that inhabited them.² These stench-producing molecules will also be part of our futures. On the one hand, the injection of sulfur dioxide into the upper atmosphere has been advocated as a way of cooling the planet. Yet an excess of carbon dioxide may lead to the acidification of the oceans, the decomposition of marine life, and the release of large amounts of hydrogen sulfide, which will poison the air and lead, as it did more than 250 million years ago, to mass human extinction.³ Our sense of smell will likely disappear before we do, since hydrogen sulfide exposure leads to anosmia (the loss of the sense of smell). These pungent scents were present at the birth of the earth. They will likely be a silent atmospheric presence at its death. The human nose will have been absent at both.

In the interim, the story of these two molecules has been and continues to be replete with rhymes and echoes that cut across multiple histories. Smell, in all its airy quasi materiality, is reliably resistant to physical and intellectual boundaries. These two sulfurous scents are no different. SO₂ and H₂S link together multiple overlapping temporal structures of quite different lengths. The sulfurous venting of volcanoes evokes the processes of deep geological time. It led seventeenth-century chemist Nicolas Lemery to assume that sulfur, mixed with iron filings and water, was one of the central causes of volcanic activity—a hypothesis that Lemery attempted to prove by making his own miniature volcanoes.⁴ The stench of brimstone has also been central in biblical narratives of divine punishment that have reinforced sulfur's chthonic character: in his meditations on hell, sixteenth-century Jesuit saint Ignatius of Loyola asked believers "to smell the smoke, sulphur, dregs and putrid things."⁵ But the odors of SO₂ and H₂S are also the defining stinks of the Anthropocene. Over the last three hundred years, industrial processes—from papermaking to the production of heavy water—have emitted these sulfurous compounds into nearby neighborhoods. Charles Frederick Cliffe, visiting the Lower Swansea Valley in Wales in 1854, described how "the copper smoke is a serious nuisance to the country around, injurious both to cattle and herbage ... At night the Swansea Valley forms no bad representation of the infernal regions, for the smell aids the eye. Large groups of chimneys and rickety flues emit sulphurous arsenical smoke."⁶

The smell of sulfur has characterized the creation of hell on earth as well as *below* it. Sulfur dioxide was present in London's nineteenth-century fogs, and it was a key ingredient in the twentieth century's three most prominent smog disasters: the Meuse Valley in 1930, Donora in 1948, and London in 1952. Sulfur has maintained its connections with the satanic and subterranean, thanks in part to the marketing of new

Frontis: Man collecting sulfur. Matthaeus Platearius, *Circa instans*, Wellcome Institute.

- 1 Harold McGee, *Nose Dive: A Field Guide to the World's Smells* (New York, 2020). The research underlying this contribution has been supported by the European Union's Horizon 2020 program project Odeuropa under grant agreement number 101004469.
- 2 Thomas Halliday, *Otherlands* (London, 2022), 131, 138, 183, 242, 287.
- 3 Jeff Tollefson, "First Sun-Dimming Experiment Will Test a Way to Cool Earth," *Nature* 563 (2018); Weiqi Yao, Adina Paytan, and Ulrich G. Wortmann, "Large-Scale Ocean Deoxygenation during the Paleocene-Eocene Thermal Maximum," *Science* 361.6404 (2018).
- 4 Antoine François Fourcroy, *A General System of Chemical Knowledge*, trans. William Nicholson, vol. 1 (London, 1807), 230–31.
- 5 Mark M. Smith, *Sensing the Past* (Berkeley, CA, 2007), 64.
- 6 John Barr, *The Assaults on Our Senses* (London, 1970), 106.

inventions. In the nineteenth century, mass-produced friction matches, which relied on a sulfur-scented chemical reaction, were named “lucifers.” In the Netherlands, this term is still widely used.

The sewers and canals of booming cities have also let out sulfuric belches. In the nineteenth century, sanitarians hoped that by connecting homes to evolving sewage and plumbing networks, the smell of human waste would be expunged from domestic life.⁷ However, sulfurous “sewer gas” threatened to emerge back through kitchen plugholes and bathroom basins.⁸ Flushing peppermint oil through the system was recommended as a way of heightening the smell of leaks and aiding their discovery.⁹

Ironically, the production of substances that aimed to cleanse and deodorize cities also ended up releasing more sulfurous compounds into the atmosphere. In the 1790s, a Scottish manufacturer, Charles Tennant, developed chloride of lime. The creation of this substance, which was initially used to bleach textiles but which became one of the chief deodorizers and disinfectants of choice in long-nineteenth-century Europe, actually produced large quantities of sulfurous smoke. A nineteenth-century poem by a local resident described the odors of the St. Rollox chemical works in Glasgow, where chloride of lime was manufactured.

Where fragrant zephyrs never blow,
But smutty is its atmosphere—
When rain falls dense and winds are low,
Its sulph'rous elements appear.

When winds blow south, a cloud by day
It may at once be seen and felt,
For smarting eyes then own its sway,
Through muffled noses then 'tis smelt.¹⁰

Around the St. Rollox factory, which closed in 1964, the sulfurous products of chemical production can still be detected. The waste chemicals from the works were dumped in an area of Glasgow that now plays host to a cemetery and blocks of flats. Local residents claim that you can still smell the sulfurous stench of hydrogen sulfide coming out of the ground on a hot summer's day—the result, in part, of the soil being disturbed as new train tunnels are dug into the contaminated earth.¹¹

Nose-less Historians

From the tip of a match to subterranean depths, sulfurous smells link together a geographically and temporally vast array of histories. Sulfurous scents echo through time, charged with meanings that resonate across different historical contexts. How can we follow these ‘whiff stories’ and write their history? And: how can we make use of our own noses in this process?

7 David L. Pike, “Sewage Treatments,” in *Filth: Dirt, Disgust, and Modern Life*, ed. William A. Cohen and Ryan Johnson (Minneapolis, 2005).

8 Joseph Wilson, *Drainage for Health* (Philadelphia, 1881).

9 John Milner Fothergill, *The Town Dweller, His Needs and His Wants* (New York, 1889), 21.

10 Hugh Aitken Dow, *History of St. Rollox School, Glasgow* (Edinburgh, 1876), 177.

11 Craig Williams, “Remembering ‘Stinky Ocean’ and the Smell That Forever Tortured Glasgow Noses,” *Glasgow Live*, February 16, 2021.

As we discussed in our earlier *AHR* History Lab conversation piece, researching the relationship between smells and the past throws up a series of methodological challenges.¹² For the most part, historians of smells and smelling have been comfortable with deploying the tried-and-true methods of social and cultural history.¹³ Scholars have thus tracked shifting representations of smell, the relationship between olfactory perception and the exercise of power, and the meanings of scents over time. However, this often ends up producing a history that relies on archives of texts (or images and objects contextualized via texts) and that disseminates its findings in the form of traditional journal articles, chapters, and books. Over the last thirty years, a growing group of scholars have produced important research that often highlights the centrality of smells and smelling to the past and present.¹⁴ However, despite all the assertions of olfaction's importance, historians are still reluctant to integrate actual smells or noses into their practice.

To study smells and their histories, indeed to do justice to smell's capacity to echo across time and space, we need to attend both to meaning and to presence. The study of smell and the past—which here we are calling Whiffstory—is partly a history of meaning, the traditional fare of humanities scholars, and involves excavating osmologies, or the ways in which odors and olfactory perceptions have ordered the world in a time and place.¹⁵ However, it is also a history of material presence: the different collections of molecules that have existed in the past, still exist in the present, and may yet exist in the future. These molecules have gradually accrued associations over time, and their layers of meaning, like the sulfurous emissions from volcanoes themselves, may lie latent until they resurface in new combinations. A smell—a moment of olfactory perception—is made up of both material odors and perceiving noses. The latter may have changed. However, the odorous compounds are more constant: they bear the present imprint of olfactory pasts and futures. To put it another way, each odorous molecule is a “fossil image” that “contains a material trace of the past within it.”¹⁶ If odors are the fossilized trace, then noses—along with the meanings, feelings, and presences with which they have been connected—are the long-decomposed matter. The study of smell and its pasts therefore involves an archaeology of odors. This archaeology requires us to reconstruct the links between odorous traces and perceiving subjects, to reunite the component parts that make up a “smell.” Forms of restoration, reconstruction, and representation that involve working with noses and smells are central to the pursuit of this archaeology.

Why Bother Using Our Noses at All?

We are aware that some readers may be alarmed by the idea that we could or should use contemporary noses or odors to understand the past. This response should not be surprising. At first glance, the guiding

12 William Tullett, Inger Leemans, Hsuan Hsu, Stephanie Weismann, Cecilia Bembibre, Melanie A. Kiechle, Duane Jethro, Anna Chen, Xuelei Huang, Jorge Otero-Pailos, and Mark Bradley, “Smell, History, and Heritage,” *AHR* 127.1 (2022).

13 For an overview of this scholarship, see Jonathan Reinartz, *Past Scents: Historical Perspectives on Smell* (Chicago, 2014). For a bibliography of work on smell and the past, see William Tullett and PastScent, “PastScent Group Library,” Zotero (website), accessed May 9, 2022.

14 For an overview of recent sensory history scholarship, see William Tullett, “State of the Field: Sensory History,” *History* 106.373 (2021).

15 Janice Carlisle, *Common Scents: Comparative Encounters in High-Victorian Fiction* (Oxford, 2004), 8–10.

16 Laura U. Marks, *Touch: Sensuous Theory and Multisensory Media* (Minneapolis, 2002), 114.

assumptions of a social and cultural history of smells and smelling run counter to any attempt at deploying the senses in the present. The overarching claim of sensory historians, summarized most recently by Mark M. Smith, is that the socially and culturally constructed nature of sensing means that it is geographically and temporally specific.¹⁷ This specificity makes sensing historical, since understandings of how the nose works, people's olfactory habits, and the meanings that smells acquire have all been subject to change over time. Using our noses or interrogating smells today therefore has little to offer in helping us to understand smell's histories: both our everyday smellscape (the combination of all smells in an environment) and our forms of olfactory attention, sensitivity, and selectivity are so different that we can never claim to smell the past in the present.¹⁸

Furthermore, the very materiality of smells in the present may have changed. Animal ingredients such as civet, musk, and ambergris, which were common in early modern perfumery in their raw form, are today represented by synthetic equivalents that are based on molecules made in laboratories.¹⁹ In other examples, the relationship between language and scent has changed: the scent that "leather" evokes in the nose of a modern perfumer is very different from that which emanated from the tanned skins of seventeenth-century animals or even the chromed leather that emerged in the nineteenth century. Both noses and the materials they sense may have changed, and this, sensory scholars have suggested, militates against the use of our own noses or forms of sensory re-creation in our work. One scholar has chosen even stronger words: the use of smells to convey the past in museums has been dismissed as one among many sensory "curatorial tricks" that boost "corporatist-informed, consumer-driven, and bureaucratically enforced" claims to contemporary "relevance."²⁰

This is quite the potential rap sheet. One reason for the concern is clear: smell history is a new area of research, and so far, there are very few methodological standards to follow when deploying the nose or theoretical explorations of what it might mean to sniff out the past.²¹ We have had some two hundred years of academic history in which a visual, text-centric, or simply meaning-centred approach has dominated. It will therefore take time to develop new ways of integrating the senses into our understanding of the past. However, some of the initial concerns that people frequently raise when they hear about the Odeuropa project and histories of, or with, smell can be swiftly addressed.²²

"Where do you find sources for smell?"

Everywhere, it turns out: texts, objects, images, buildings, and landscapes all provide useful evidence for olfactory histories, and once you start to sniff around, there is an abundance of useful material.

"Aren't smells just individual and subjective?"

Responses to smell can be specific to individuals, but those

17 Mark M. Smith, "Producing Sense, Consuming Sense, Making Sense," *Journal of Social History* 40.4 (2007).

18 J. Douglas Porteous, "Smellscape," *Progress in Physical Geography* 9.3 (1985).

19 Holly Dugan, *The Ephemeral History of Perfume: Scent and Sense in Early Modern England* (Baltimore, 2011).

20 Mark M. Smith, *A Sensory History Manifesto* (University Park, PA, 2021).

21 This is something that one of the current authors is seeking to remedy; see William Tullett, *Smell and the Past: Noses, Archives, Narratives* (forthcoming).

22 The Odeuropa project is three-year project, running from 2021 to 2023, funded by the European Union Horizon 2020 program under grant agreement number 101004469. It aims to trace, analyze, and preserve the olfactory history and heritage of Europe from the 1600s to the 1920s using an interdisciplinary mix of methods from the humanities, computer science, museology, analytical chemistry, and heritage. You can find out more about the project at Odeuropa (website).

individual responses are often the product of a mix of wider forms of olfactory training and habit formation. With smelling—as with so many other experiences—it is important to recognize that “our most private inner life, our most potent experiences are always already parsed, structured and interpreted in ways that we do not choose.”²³

“Aren’t smells hard to put into words?”

Well, lots of experiences (such as love) are hard to describe, but that should not stop us from researching their histories. Perfumers, coffee graders, wine tasters, and many others have complex and nuanced vocabularies for smell. While English is not the most comprehensive when it comes to olfactory language, there are plenty of cultures with rich vocabularies for describing odors.²⁴ What’s more, there is plenty of evidence that past cultures often had nuanced ways of talking about smell—ways that we have lost. Once you begin to ask around, as we have, you quickly discover that our own societies do have rich dialect and slang terms for smell.²⁵

It is easy to argue for a social and cultural history of smells. It is more difficult to outline the methodological justification and best practice for a social and cultural history *with* or *through* smells. Hendrik Zwaardemaker, the groundbreaking Dutch smell researcher, remarked in 1898 that we “live in a world of odor.”²⁶ Smells are something we live in and with rather than something we merely decode as a set of signs and symbols—they are a material presence that flows in a particular way within spaces. This means that using olfactory reconstructions, that explore the physical flows and dispersal of smells, as part of our historical methods can offer new insights. For example, evoking the smellscape of a seventeenth-century play by burning the same perfumes called for in the stage directions helps us to re-create the context in which the play’s words were spoken by understanding how the scent might have dispersed throughout the theater: a reconstruction helps us to understand material presence, which is to say the context in which meaning is made, rather than meaning alone.²⁷

An emerging scholarship is demonstrating the varied potential of smell as part of our methodologies. Re-creations of past cosmetics or everyday scents can be used as a prompt for oral histories and a means for elaborating the memories, values, and heritage of a community.²⁸ Rather than starting with the documented past, putting our noses to a scent can give us new ways of entering the past via the present—establishing genealogies that make sense of our contemporary olfactory cultures by walking back the olfactory cat. National differences in reactions to scent—for example, wintergreen, which is disliked in the United Kingdom for its medicinal associations but loved in the United States for its candy scent—can be explained by working backward in time and tracing molecular histories.²⁹ Bodies, including their perceptual

- 23 Chris Millard, “Using Personal Experience in the Academic Medical Humanities,” *Social Theory and Health* 18.2 (2020): 194.
- 24 Asifa Majid, “Human Olfaction at the Intersection of Language, Culture, and Biology,” *Trends in Cognitive Sciences* 25.2 (2021).
- 25 See the essays contained in Sebastian Groes and R. M. Francis, eds., *Smell, Memory, and Literature in the Black Country* (Cham, 2021). The NeusWijzer (Nose Wise) project captures Dutch smell language in all its (regional) variants. As part of the project, 1,850 participants filled in a survey of a hundred questions relating to smell language and practices. The results will be published in 2023. See “NeusWijzer: A Guide to Dutch Smell Culture and Language,” Odeuropa (website), accessed May 12, 2022.
- 26 Hendrik Zwaardemaker, “Les sensations olfactives, leurs combinaisons et leurs compensations,” *L’année psychologique* 5 (1898): 203.
- 27 Holly Crawford Pickett, “The Idolatrous Nose: Incense on the Early Modern Stage,” in *Religion and Drama in Early Modern England*, ed. Jane Hwang Degenhardt and Elizabeth Williamson (London, 2011), 35–36.
- 28 Sebastian Groes and Tom Mercer, “Smell and Memory in the Black Country: The Snidge Scrumpin’ Experiments,” in Groes and Francis, *Smell, Memory, and Literature in the Black Country*; Victoria Tischler and Sophie Clapp, “Multi-sensory Potential of Archives in Dementia Care,” *Archives and Records* 41.1 (2019).
- 29 Rachel S. Herz, “I Know What I Like: Understanding Odor Preferences,” in *The Smell Culture Reader*, ed. Jim Drobnick (Oxford, 2006), 196.



A paris Chez A. Trouvain rue Saint Jacques au grand Monarque avec privilege du Roy.

L'Odorat

Figure 1. Antoine Trouvain, *L'Odorat*, 1666–1708, etching on paper, 309 × 200 mm, RP-P-2008-451, Rijksmuseum, Amsterdam.

proclivities and sensory skills, are archives of longer historical shifts in sensing.³⁰

In other cases, using smell might advance our existing techniques for conveying history to fellow researchers and to a broader public: an olfactory interpretation of what a past location or object may have smelled like is, as with a book or journal article, an interpretation and ordering of knowledge about the past, based on primary research, that we can thoughtfully engage with. The difference is that instead of words, paper, and ink, the format for advancing that interpretation is scent. Perfumes also tell stories through smell—they are structured as a temporal unfolding characterized by the changing of scent over time, as the scent evolves on a blotter or on the skin. Scent therefore offers not just a device for re-creating or representing historical presences—the smells that may have existed in a period or place—but a potent mode of storytelling and a tool for conveying historical arguments about change or continuity over time.

Representing Historical Smells

How do we bring scents back from the past? How can we re-present historical scents to current noses? And what can we learn from this? To find answers to these questions, we need to navigate different fields of expertise and exploration. At this moment, historical smell representations are developed by perfumers, olfactory artists, heritage scientists, museum curators, and the entertainment industry, to name just a few. Olfactory entrepreneurship is a growing economic domain. Eager to present new impactful scents, the scent industry has also experimented with historical smells. The fragrance house *Histoires de Parfums* specializes in scents inspired by historical personae and years, such as their “timeless classics” 1472 (inspired by the *Divine Comedy*) and 1889 (which evokes the Moulin Rouge), as well as 1725 (which takes its cue from Casanova).³¹ Perfumers and researchers have also collaborated to re-create historical perfumes—of Cleopatra, the king of Parthia, and Napoleon.³²

Historians came to scent quite late in the game. As most historical researchers have been relatively reconstruction reluctant, we lack both an insightful description of the different (forms of) historical scent representations and a sound methodology for this type of research.³³ However, sources of inspiration in the historical discipline range from remaking historical clothing and consumables to performing scientific experiments with the original instruments and materials. In the Odeuropa project, we are experimenting with different historical smell representations while developing an academic framework for this type of research. The flavor—just a brief sniff at this stage—of our work in progress that we offer in the pages of this journal should be regarded as an invitation to open discussions on how we can integrate the nose in historical research and education and why this would be both valid and valuable.

30 For an example of this in relation to taste, see Alex Rhys-Taylor, *Food and Multiculture: A Sensory Ethnography of East London* (London, 2017), 41–56.

31 “Timeless Classics,” *Histoires de Parfums* (website), accessed May 10, 2022; “Characters,” *Histoires de Parfums* (website), accessed May 10, 2022.

32 Cecilia Bembibre, “Archiving the Intangible: Preserving Smells, Historic Perfumes and Other Ways of Approaching the Scented Past,” in *The Smells and Senses of Antiquity in the Modern Imagination*, ed. Adeline Grand-Clément and Charlotte Riberyrol (New York, 2022).

33 It is telling that most descriptions of historical scent representations come to us in the form of art exhibition catalogues, blog posts, interviews, YouTube videos, and public media coverage. Bembibre, “Archiving the Intangible,” presents an overview of a wide array of olfactory projects.

First, we need to realize that smells come to us from the past in different, intersecting ways (as with sulfur’s echoes). We use the concept of “olfactory representations” as an overarching category to talk about the different pathways smells may draw among past, present, and future. Olfactory representations function on different levels. First, smells from the past may be present to us since they are still here, in their physical reality. Secondly, we can reach back to the historical representation of smells as captured by nose witnesses, in text or images. Thirdly, through reconstructions or re-creations, we can represent historical smells that have been lost over time, making use of the first two layers of representation. All levels bring up issues around authenticity and historical accuracy. How can we design olfactory representation methods that are in line with our scholarly values and requirements? How can we make sure that, to refer back to Mark M. Smith, olfactory history becomes a theorized field of inquiry, both empirically fleshed out and intellectually rigorous? Here, we can learn from the fast-expanding group of hands-on historians of food, arts and crafts, and science, who work with performative methods.³⁴

Whiffstory puts the nose into embodied learning. The name, drawing as it does on the colloquial olfactory term “whiff,” might elicit accusations of flippancy from some. Yet the use of the term is deliberate: the mixing of “whiff” and “history” only appears to lack seriousness because of a long-held academic suspicion of the putatively lowbrow, the embodied, and the olfactory. In other words, like the interdisciplinary methods we advocate for understanding smell, the term calls for humanities scholars to open both their minds and their noses.

Whiffstory is specifically challenged by the intermingling of production and perception. Smells start in the human nose. This also means that historical scents will engage with contemporary odorants, smellscape, and our “period noses.”³⁵ Therefore, an academic model for historical scent representation needs to take individual sniffers into account, in terms of personal smell abilities (lay or expert noses), cultural sensitivities and specificities, and power relations at play.³⁶ Accounting for these issues may help to overcome the criticism toward nose-on methods in the historical domain—that they would aim at a make-believe of experiencing the past, leading to the commodification of history instead of sound knowledge.³⁷ We would argue that production and consumption are closely entangled. Historical and contemporary noses are both “prosumers”: they create meaning and interpretation while engaging with smells. Acknowledging and accounting for this is an important issue in sensory studies.

Now let’s take a sniff of the different kinds of methods employed in the last few decades to represent historical smells—to bring them to the contemporary nose. The reader should be aware that these methods encompass the employment of different scientific, scholarly, creative, and practical techniques and that all representations come with their own forms of interpretation and specific opportunities and challenges.

34 For a good introduction to these methods, see “Rethinking Performative Methods in the History of Science,” special issue, *Berichte zur Wissenschaftsgeschichte* 43.3 (2020).

35 Caro Verbeek, “Presenting Volatile Heritage,” *Future Anterior* 13.2 (2016).

36 Smelling is not a neutral act but embedded in power relations (e.g., olfactory othering), subjugating and controlling subaltern bodies. For useful explorations of this, see Reinarz, *Past Scents*, 85–177.

37 Smith, “Producing Sense, Consuming Sense, Making Sense.”

Per section, we have highlighted one knowledge domain of particular importance for that kind of representation, but as we will describe, in fact most representations combine different forms of expertise.

Preservation + Conservation + Restoration

Knowledge domain: Heritage and museum studies

Conservation: All the processes of looking after a place/object so as to retain its cultural significance.

Restoration: Returning a place/object to a known earlier state by removing accretions or by reassembling existing elements without the introduction of new material.³⁸

The first category of representation concerns the *curation* of material smells. Many odorants that have been handed to us from the past are still sniffable in their original forms. These might be single ingredients with cultural significance, like frankincense and myrrh, or historical compositions, like famous perfumes. These material scents may have been less accessible to us over the course of time. As mentioned earlier, many countries have banned the harvest, usage, and sale of animal odorants. Some natural flower scents are threatened with extinction, or are undergoing fundamental changes because of agricultural cultivation practices. These scents can be captured by collecting, distilling, and other perfume industry or scientific techniques such as headspace technology.³⁹

Archives like the Osmothèque in Versailles (founded in 1990 by acclaimed perfumers, now guardian of more than four thousand perfumes) and Mandy Aftel's collection of perfume ingredients have taken up the task to safeguard odorants and scents, along with perfume formulas. People can also visit these archives to reengage with the original scents.⁴⁰ A recently founded library of scent in Poland, aimed at educating blind children, also adds more daily-life smells to this palate, like the smells of spices and railway engine grease.⁴¹ Bodies such as the Institute of Art and Olfaction (Los Angeles) or the Olfactive Library (Glasgow) are becoming repository for smells and points for the public to gain access to olfactory knowledge.

A more malodorous curatorial challenge came from the Whitechapel fatberg, a gigantic mass of wastewater grease, put on display by the Museum of London in 2018.⁴² Because of the obvious health threats, the fatberg smell was not exposed to the public. The only nose witnesses to the stench are the sewer laborers who dug it up and the curators of the museum. They report how after the curatorial process of drying the fatberg, the smell turned from active sewer to damp basement. This example highlights how the curation of historical objects is often not conducted with smell conservation in mind. It also indicates that

38 Australia ICOMOS, *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance*, 2013.

39 Cecilia Bembibre and Matija Strlič, "Preserving Historic Smells," in *Mediality of Smells*, ed. Jean-Alexandre Perras and Érika Wicky (Oxford, 2022).

40 Another interesting scent archive is that of olfactory artist Sissel Tolaas. Since 1990, Tolaas has curated her "alphabet for the nose" "with a linguistic purpose" in mind, and it now already contains around seven thousand scents from all around the world. See Bembibre, "Archiving the Intangible," 159.

41 "Library of Smells for Blind and Visually Impaired People to Open in Poland," Newz Hook, February 15, 2021.

42 Vyki Sparkes, "Fatberg! Exhibiting the 'Monster of Whitechapel,'" Museum of London (website), February 6, 2018.

although they may have heritage value and be useful for understanding and articulating the past, malodors are even more of a challenge to feed into the loop of historical learning. In 2021, the Odeuropa project organized a workshop on malodors with heritage curators to investigate how we can overcome these challenges.⁴³

Smells also challenge the conservation model as they often need renewal—their volatile nature makes it hard to stabilize scents. Top notes will evaporate more easily, and when kept under sunlight, the smell will change quite rapidly. Curation and maintenance therefore entail *restoration*—for instance, by re-creating a perfume from its original recipe. In the “Smell, History, and Heritage” piece in the previous issue of this journal, Jorge Otero-Pailos described the struggles around the preservation of the smell of the Glass House and other architectural landmarks.⁴⁴

The restoration of the scent of the Beanery, a bar in Los Angeles, highlights the challenges that smell restorations pose. A “replica” of its namesake, *The Beanery* (1965) by artist Edward Kienholz (1927–94) is on permanent display in the Stedelijk Museum, Amsterdam, and stages the atmosphere of a bar in the 1960s, including the smell of beer, ashes, rancid grease, mothballs, and urine. When this olfactory artwork had to be reconstructed, in 1983 and again in 2012, the original scent was not approximated closely. Elements were changed (like ammonia for urine) or left out (like mothballs) because of concerns about hygiene, health, and threat to the physical objects (the scent caused molding of the bar). These changes might have safeguarded the physical surroundings, but they did damage the original scent in its olfactory impact. They highlight the way in which the visual is often protected over the olfactory when it comes to heritage. Conservation and reconstruction are processes based on choices. Those choices often reveal the continued dominance of a distribution of the sensible that values sight over smell in a museum context.⁴⁵ Conserving and restoring historical smells thus often poses challenges that may interfere with the original smell, which brings our discussion to another form of representation: reconstruction.⁴⁶

Olfactory Reconstructions

Knowledge domain: Heritage science

Reconstruction: Returning a place/object to a known earlier state by the introduction of new material.⁴⁷

Olfactory reconstruction also starts with the materiality of smell. Here we can think about not only museum objects that still contain fragrant residue, like pomanders, perfume bottles, or apothecary cabinets, but also objects with culturally significant smells, such as old books, perfumed gloves, snuffboxes, tobacco pipes, or scented toys. Heritage science has

43 The recordings of talks given at this event will be added to the Odeuropa YouTube account in June.

44 Tullett et al., “Smell, History, and Heritage.”

45 Verbeek, “Presenting Volatile Heritage.”

46 Bembibre and Strlič, “Preserving Historic Smells.”

47 Australia ICOMOS, *The Burra Charter*.



Figure 2. Glove scent analysis by University College London Smell of Heritage project. Clockwise from top left: Gloves in their archival case, chromatogram showing GCMS analysis, gloves sampling setup at Knole's conservation studio, Knole House in Kent. Credit: National Trust.

developed methodologies to capture and analyze the volatile organic compounds (VOCs) of the objects, which offers the opportunity to reconstruct the original smell and represent it to the current nose. The Heritage Science group of University College London specializes in smell preservation, recording data on significance and chemical and sensory qualities of smells and their sources, enabling scent reconstructions. The group has preserved the smell of old books and historic libraries and researched the meaning of other smells associated with heritage, such as mold.

In 2017, a pair of eighteenth-century leather gloves from the archive of the National Trust was selected as a case study as part of a doctoral project exploring the role of scent in heritage. The gloves had belonged to John Frederick Sackville, 3rd Duke of Dorset, and were presumed to be perfumed. They were stored, as part of an outfit, in the archives at Knole, the duke's family home in Kent, England (fig. 2). The study sought to characterize and document the smell of the gloves, recording chemical and sensory attributes of the artifact. For this, a novel framework for the identification, analysis, and preservation of culturally significant scents was followed, which enabled future reconstructions of the fragrance.⁴⁸

48 Cecilia Bembibre and Matija Strlič, "Smell of Heritage: A Framework for the Identification, Analysis and Archival of Historic Odours," *Heritage Science* 5.2 (2017).

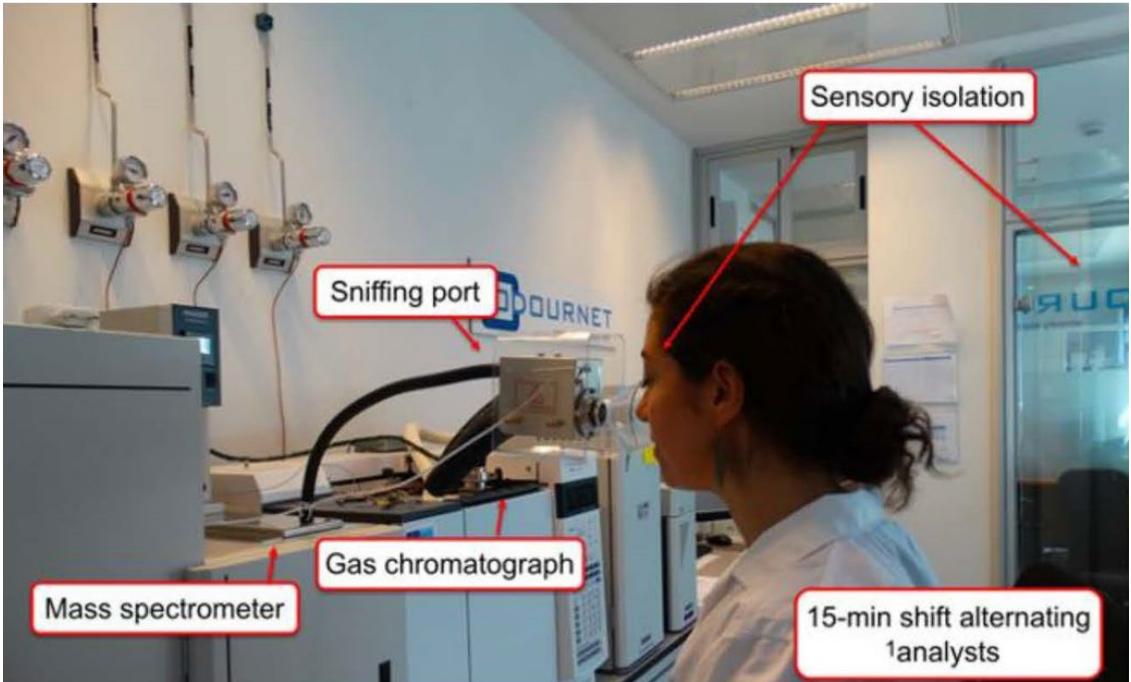


Figure 3. Gas chromatography–olfactometry technique, enabling simultaneous chemical and sensory analysis of VOCs/smells. The analyst’s nose is placed at the end of the olfactory port connected to the chromatograph. Credit: C. Villatoro.

An initial olfactory inspection of the item revealed no noticeable smell. This was followed up by chemical investigation, involving VOC sampling using headspace solid-phase microextraction (HS-SPME), coupled with gas chromatographic–mass spectrometric analysis (GCMS). These techniques allow us to capture the smells in an environment (in this case, the gloves were encased in a bell jar and left so the VOCs responsible for the smells could concentrate in the sealed vessel) and take them to the laboratory for analysis. GCMS analysis separates each compound in a mixture and enables its identification, as peaks on a graph, with the support of a chemical library. The results were inconclusive: no perfume was detected as emitted from the gloves.

While this example did not contribute to the development of the methodology, or provide data for a scent reconstruction, it did bring up the role of heritage conservation practices and their impact on the smell of artifacts (a decision-making process often requiring a balance between risk management and ethics).⁴⁹ Other Knole-related scents, such as a historic potpourri that used to scent the property halls in the eighteenth century, were successfully preserved.⁵⁰ For the potpourri the same methodology was used for chemical analysis, with the addition of gas chromatography–olfactometry, an instrument-based technique that enables us to smell the VOCs and therefore gain an understanding of the human perception of the smell. In addition, sensory evaluation panels are usually conducted to record the intensity, hedonic tone (pleasantness), and quality (e.g., musty, fetid, or floral) of the smell.

49 For example, the following post records a thoughtful discussion among Imperial War Museums’ conservators and curators around the conservation of an object’s smell: Isabelle Hetherington, “Scent Related Campaign’: Ethical Decision Making behind the Conservation of Smell,” *IWM Blog*, Imperial War Museums, January 22, 2020, <https://www.iwm.org.uk/blog/research/2020/01/scent-related-campaign-ethical-decision-making-behind-conservation-smell>.

50 Cecilia Bembibre, Siobhan Barratt, Luciano Vera, and Matija Strlič, *Smelling the Past: A Case Study for Identification, Analysis and Archival of Historic Potpourri as a Heritage Smell* (Paris, 2017).

The preservation documents combine chemical and sensory data in the form of odor wheels and other tools. These are the tools, languages, and techniques used by heritage science and, in many cases, by other smell-related industries, including the fragrance, odor-regulation, and food industries. In order to work with smell, humanities scholars should learn to collaborate with those who use these techniques and understand how they operate, their potential uses, and caveats regarding the data they produce.

Olfactory Re-creations

Knowledge domain: History, perfumery

Although the Knole glove reconstruction turned out to be challenging, through re-creation methods inspired by the history of science and medicine, we were able to represent the smell of early modern scented gloves. In an accompanying article in this issue of the journal we present a detailed account of the glove scent re-creation and the scratch-and-sniff card which presents this smell.⁵¹ Olfactory re-creations entail reconstructions that cannot start from a physical reality but that do start from a detailed instruction. Here we think foremost about the re-creation of historical recipes, such as the recipes of the scents that were used for religious rituals, embalming processes, fragrant tobacco, household perfumery, and aromatherapy. Recently, a scented candle was created from a historical perfume recipe belonging to the famous Dutch author and statesman Constantijn Huygens.⁵² The Osmothèque also houses some historical perfume re-creations, such as the Parfum Royal re-creation of a recipe from the first century. Olfactory re-creations provide great opportunities to learn about fragrant ingredients and olfactory techniques, as well as about conceptions of health and well-being. But they can also be employed to explore more malodorous phenomena (see the section below on “Stink Bombs and Orange Blossom: Smell as *Lieux de Mémoire*”).

Historical Smell Scene Compositions

Knowledge domain: History, archaeology, perfumery

In the last years, we have witnessed a growing trend toward employing scent in a heritage context. Museums have opened their “white cubes” to multisensory storytelling. One line of historical scents that are represented entails compositions that aim to evoke historical smellscape. Romuald Hazoumè’s *La Bouche du Roi* (2007) stages a slave ship, while distributing a composed scent of tobacco, spices, and human urine and feces. The end goal is not an exact replica; instead, through olfactory juxtaposition, the artwork calls forth the relationship between fragrant

51 Lizzie Marx, Sofia Collette Ehrich, William Tullett, Inger Leemans, Cecilia Bembibre, Odeuropa, IFF, and Museum Ulm, “Making Whiffstory: A Contemporary Re-creation of an Early Modern Scent for Perfumed Gloves,” *The American Historical Review* 127.2 (2022): 882–893.

52 The candle was a coproduction among historians and the cosmetics firms Huygens Paris and Givaudan. For an exploration of the process, see Marjolijn Bol, Jan van Daal, Grace Kim-Butler, and Henrike Scholten, “Making Scents of the Past: A Collaboration between Het Geheugen van Geur and DURARE to Reconstruct a Seventeenth-Century Scent,” ERC DURARE (website), May 9, 2022.



Figure 4. Final scent boxes produced for Port City exhibition at Museum of London, Docklands in a collaboration involving scent designer Tasha Marks, IAVN Curiosities and curator Claire Dobbin.

products and the suffering embedded in their production. Scent designer Tasha Marks conducted archival and oral history research to stage the smell of the London docks for the Museum of London Docklands. This involved interviews and smelling sessions with locals who had lived and worked on the docks, quotes from which were included alongside the scents in the final exhibition in order to give a perceptual context for the scents. Olfactory historian Caro Verbeek, together with International Flavors and Fragrances (IFF), composed a smell based on the Battle of Waterloo, to be smelled in front of the gigantic painting of this scene by J. W. Pieneman in the Rijksmuseum, Amsterdam. The olfactory clues are derived from the scene of the painting, enriched by historical research—for instance, about Napoleon’s infatuation with cologne. In this case, the scent was used as a tool for giving multisensory access to museum displays for the partially sighted. Another smellscape composition, of the scent of an eighteenth-century Amsterdam canal house, to be smelled in the Beuningen room in the Rijksmuseum, worked with a combination of indoor scents (fireplace, wooden panels, and mold) and outdoor scents (canal stench and lime trees). In this case, the intent was to reodorize a historical interior, reconnecting it with its past environment, in order to give a broader sense of how the space and its permeability to the city street outside might have been experienced by those who inhabited it.⁵³

53 Caro Verbeek, “*Ruiken aan de tijd: De olfactorische dimensie van het futurisme (1909 – 1942)*” (PhD diss., Vrije Universiteit Amsterdam, 2020).



Figure 5. Museum Ulm Deputy Director and Curator Dr. Eva Leistenschneider testing out the “smell from hell” that was developed with Odeuropa team members to accompany this painting by Martin Schaffner. Here the scent is delivered via a whispi, a dry-scent delivery method.

Malodours as Cultural Heritage?

December 15-16, 2021

Workshop Organization: Odeuropa & Berlin Center for Cold War Studies - Leibniz-Institute for Contemporary History & Stiftung Stadtmuseum Berlin at the Humboldt Forum



Strawberries by Klaus Pichler. Sort: Strawberries 'Elsanta'. Place of production: San Giovanni Lupatoto, Verona. Cultivation method: Foil greenhouse. Time of harvest: June - October. Transporting distance: 741 km. Means of transportation: Truck. Carbon footprint (total) per kg: 0,35 kg. Water requirement (total) per kg: 348 l. Price: 7,96 € / kg.

Photo courtesy of [Klaus Pichler](#).

Figure 6. Flyer for the Odeuropa workshop “Malodours as Cultural Heritage.” December 2022.

Evocative as these smellscape compositions may be, they pose a challenge to scholarship. Museums have trouble documenting the olfactory components of artworks, which makes it hard for (art) historians to capture the research performed for the composition and the arguments for certain interpretative choices. What period of the space is highlighted? Why are certain olfactory components highlighted but others ignored? Were nose witnesses taken into account in the interpretation? What ingredients were used to suggest certain scents (such as urine, the sweat of battling soldiers, and horses)? Sometimes combinations of techniques are employed: the Battle of Waterloo integrated existing compositions with a historical pedigree (cologne), single notes (leather), and reconstructed smells (the smell of a horse, captured with headspace technology).

It is obvious that these smellsapes require a higher degree of creative interpretation than that of smell reconstructions. However, there is plenty of room for scholarly exploration and improvement. When the Odeuropa team collaborated with Museum Ulm and IFF to develop the smell of hell as part of the museum's olfactory tour, we performed historical research, capturing the ingredients of hell mentioned in early modern texts and depicted in a painting from the collection (brimstone, smoke, cadavers, excrement, fear, and so on). The next level of interpretation is also documented. The perfumers described their interpretations of the scents. Sulfur and cadaverine cannot be offered to the public's nose because of concerns about physical and emotional well-being, in addition to ethical considerations. These scents needed to be translated with ingredients that have comparable effects to the human nose. Given their use in a museum, these scents should not elicit horror or terror. Smell can evoke strong memories. Smells can evoke trauma. Again, the consumption of the scent informs the production.

Although smellscape composition might have high levels of selectivity, this should not necessarily stand in the way of the knowledge they can render. The smell of hell brings rich information to the public about early modern religious thinking and olfactory anxieties. The layered composition by IFF also brings in the element of timing as the scent unfolds: one first smells the top notes of smoke and burning and then sinks into the more earthly, human components. Most sniffers up to now find the smell disgusting, but they keep on smelling it anyway. This olfactory story line helps to narrate, for participants with or without knowledge of the history of religion, how the concept of hell was about personal sin, about the burning of souls, as the soul of the sinner was perceived as foul as excrement. Here, we can refer back to early modern religious practices that aimed to evoke the scent of hell by textual description, sermons, and devotional exercises. In *Spiritual Exercises*, Ignatius of Loyola applied this technique, asking readers to use their sensory imaginations to make hell as tangible as possible. Much like the IFF composition, believers are disgusted by the scent but encouraged to return to it, to sniff again, and to remind themselves of what might wait in the unholy depths. This olfactory representation of hell

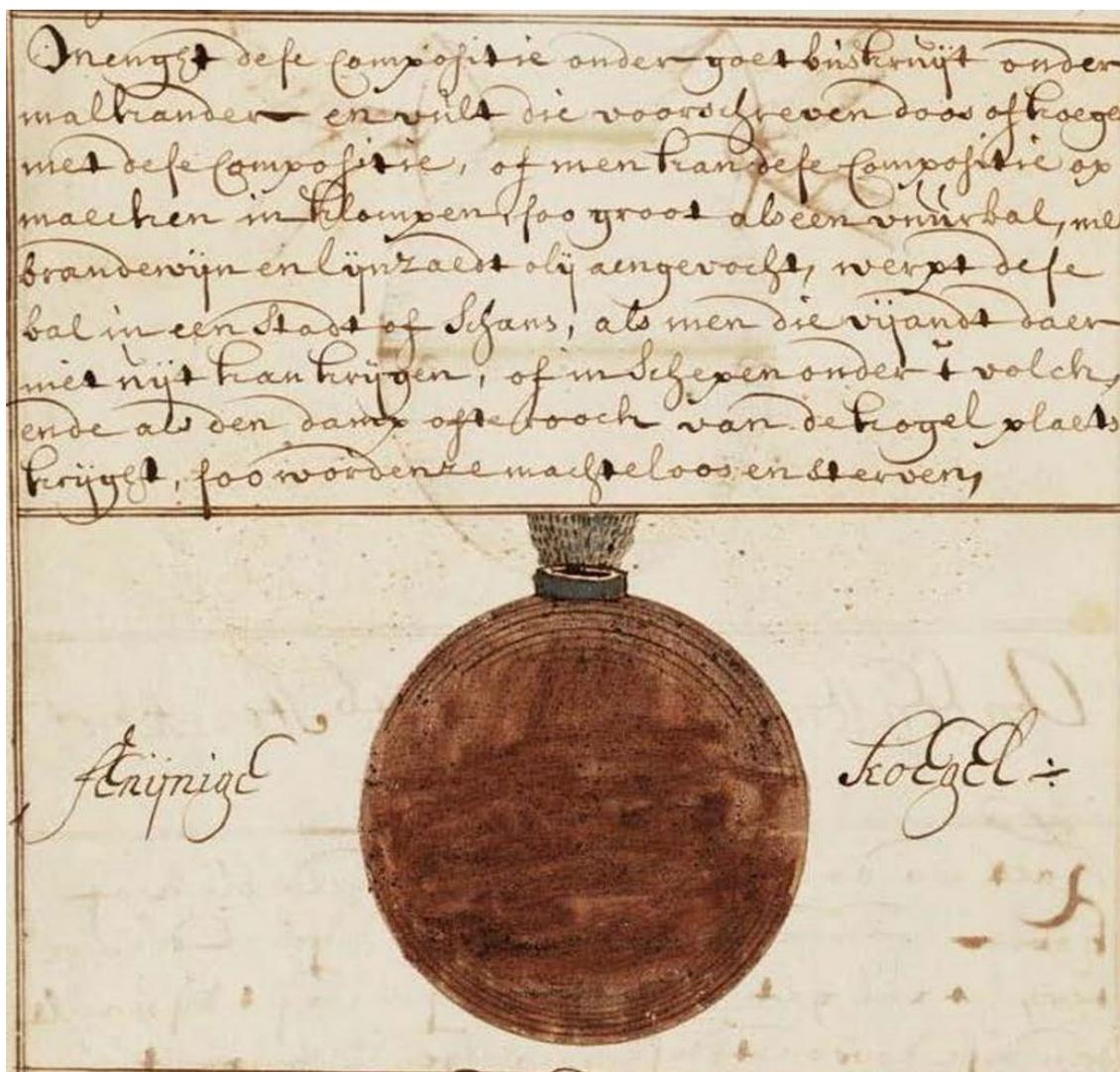


Figure 8. Drawing of a stink bomb (a “vicious bullet”). Daniel Galschut, *Pyrotechnia of Konst in’t vuurwercken Geschreven op ‘t Schip t Huijse Ter Loo door mijn Daniel Galschut van Kopenhagen*, ca. 1692–1706, 00112088/177, Nationaal Militair Museum.

storytelling in heritage institutes. In the Rijksmuseum exhibit *Asia in Amsterdam*, 2015–16, the smells of nutmeg, clove, and cinnamon were used to explain the development of global expansion. In 2022, the Prado Museum, in *The Essence of a Painting: An Olfactory Exhibition*, staged ten ingredients (eight of which were single flowers) associated with *The Five Senses* by Brueghel and Rubens. In *Der Nase nach* (2022), the olfactory guided tours hosted by Museum Ulm, frankincense and myrrh are offered in front of a painting of the Adoration of the Magi. Myrrh was also presented in *Fleeting: Scents in Colour* at the Mauritshuis, The Hague (2021), to evoke the bitterness of Christ’s fate—as was ambergris, in connection with an engraving of a beached sperm whale.⁵⁴ The interpretations seem more straightforward here, as in the case of smellscape

⁵⁴ Ariane van Suchtelen, ed., *Fleeting—Scents in Colour* (The Hague, 2021).

compositions, but in fact much depends on the quality and the origin of the ingredients. Real ambergris is not for sale anymore, so the modern nose has to make do with chemical ambery notes like Ambermax 10 by Givaudan (CAS No. 929625-08-1, 1001252-30-7). Also, solution and diffusion techniques influence the smell representation. Point-of-scent dry-diffusion techniques can “flatten” a smell but are safer in a museum space, while spraying “wet” scents (on a base of alcohol, oil, or water) can be perceived as harmful to heritage objects but enables the scent to develop and change over time to a greater degree (in the accompanying article in this issue on the re-creation scent of early modern perfumed gloves, we describe more of these concerns).⁵⁵

Olfactory Imaginations—Conceptual Creations

Knowledge domain: Olfactory Art, Perfumery, History

The last, and perhaps most extensive, category is that of olfactory imaginations. Here we think about the manifold artistic creations that work with historical material but that are not meant to be historically accurate. The story of the scent and the *intended impact* on the smeller are more dominant than historical exactitude or learning outcomes. The intended impact might be a historical sensation, but the route taken to achieve this might have little to do with historical scent material. On the other hand, the goal may be to mount an argument about the role of smell in the past or to aid people in understanding their own olfactory subjectivities in the present. A number of recent books have highlighted the importance of olfactory art in conveying persuasive points about the relationship between smell and society and in advancing arresting arguments that raise awareness about major contemporary crises. Artists have addressed the topics of climate change and pollution, colonization and empire, and gender and sexuality through olfactory installations that make strong points about the relevance of our olfactory pasts to the political concerns of the present.⁵⁶ Here we come back to the point we highlighted earlier—that smell can do the work of making compelling arguments or illustrating particular stories rather than merely offering a mimetic illustration. Smell can be convincing not only in its relationship to historical context and basis in primary-source materials but in its power to persuade through narration.

Conclusion: A Call for Representations by Nose-Wise Historians

Historical scents can reach the contemporary nose in multiple ways. Historians can employ different strategies to represent historical smells, from conservation and restoration, through reconstructions and re-creations, to creative olfactory interpretations. Choices for different forms of

55 Lizzie Marx, Sofia Collette Ehrich, William Tullett, Inger Leemans, Cecilia Bembibre, Odeuropa, IFF, and Museum Ulm, “Making Whiffstory: A Contemporary Re-creation of an Early Modern Scent for Perfumed Gloves,” *The American Historical Review* 127.2 (2022): 882–893.

56 See, for example, the works described in Hsuan Hsu, *The Smell of Risk* (New York, 2020), and Gwenn-Aël Lynn and Debra Riley Parr, eds., *Olfactory Art and the Political in an Age of Resistance* (New York, 2021).



Figure 9. Collaboration between art critic and perfumer Bharti Lalwani and Nicolas Roth, scholar of early modern South Asia and horticulturalist for their 2022 exhibition *Bagh-e-Hind* at the Institute for Art and Olfaction, Los Angeles.



Figure 10. Giuseppe Maria Mitelli (after Agostino Mitelli), *Odorare* (*Allegory of Smell*), ca. 1700, RP-P-2013-27-3, Rijksmuseum, Amsterdam.

representation are made with specific noses and sensitivities in mind. For historians, the validity of these nose-on techniques for academic research lies, we think, along the axes of questions such as the following:

- Is the scent perceived as authentic (the extent to which the smell's properties match those it carried at its formation)?
- Is the scent convincing (in line with our knowledge about the specific context of the scent)?
- Does it expand our knowledge about the past?

Whereas curatorial and reconstruction methods often aim for authenticity, olfactory re-creations and historical smell scene compositions will probably be best evaluated by whether they are convincing. On the whole, all olfactory representations can help to disseminate and expand historical knowledge in different ways.

It is worth noting that the scholarly gains made from working with our noses and creating scents come not only from the final product. The process of creation and exploration that is necessitated as historians work with their noses—and, indeed, the noses of perfumers, artists, heritage scientists, and other olfactory experts—is just as important as

the end result. The collaborative relationship between historians and other noses can provoke new questions and lead to new ways of understanding the past. For an excellent example, we can turn to the conversations between art critic and perfumer Bharti Lalwani and historian of early modern South Asia Nicolas Roth, who recorded the interactions involved in marrying modern scent interpretations to Mughal and Rajput paintings.⁵⁷ In this example, both perfumer and scholar brought very different questions, knowledge, and answers to the table. Working with scent and early modern artworks encouraged both collaborators to look more closely for olfactory information, to think through the spatial and temporal smell narratives contained within the images, and to examine the materiality of the scents evoked by the paintings. Crucially, both participants came out of the process with a greater understanding of each other's methods and point of smell (rather than "point of view").

This contribution to the History Lab, we hope, helps to show that humanities research is in transition. Topics like the history of smell invite interdisciplinary collaborations. With changing research practices come new challenges for presentation and documentation. These might force us to reconsider some of the basic and implicit disciplinary assumptions, including how our terminology for describing history is often visual and auditory. Finally, new fields like whiffstory urge us to rethink our publication practices. The question is not just "Who wrote this article (and this issue's piece centered around the scratch-and-sniff card)?" but "How do we account for all the noses employed?"

57 Bharti Lalwani and Nicolas Roth, "Bagh-e Hind: Scent Translations of Mughal & Rajput Garden-Paintings," *Bagh-e Hind* (website), September 10, 2021.

Stink Bombs and Orange Blossom: Smell as *Lieux de Mémoire*

Can smell represent a historic year? In 2022, various communities in the Netherlands commemorate the Disaster Year, 1672, in which the Dutch Republic was attacked from all sides. The resulting civic unrest led to the brutal slaughtering of the state pensionary Johan de Witt and his brother. The Odeuropa team collaborated with Jorg Hempenius, director of Iscent, to compose the "scent of 1672." The result may offer an insight into how smell representations can intersect the different representation classes we just presented. We are thus laying a critical bomb, so to speak, under our own classification.

In order to capture the scent of 1672, we collected a data corpus of one hundred pamphlets written in that year. A text-mining exploration (in the next issue, we will describe our AI methodology for sensory mining) helped us hone in on the most frequently referenced smells and their accompanying descriptions. Terms clearly fell into one of two domains, referencing either the devilish malodors of war or the more fragrant aspects of life—the balming scents of consolation, the hopeful whiffs of a fresh start. With the malodors of war, one stench particularly stood out: the foul odor of "stinkpots," used for olfactory warfare. When it came to

more pleasant scents, orange blossom, a reference to the hope that William III might be the savior to the desperate provinces, featured most prominently.

Together with Iscent, we decided to make two scents to represent 1672: a re-creation of the stinkpot scent and an olfactory imagination of the fragrant scent of hope. For the stink-bomb scent, we could fall back on early modern recipes and nose-witness reports. Since the smell we wanted to conjure up was that of the bombing of the city of Groningen by the German bishop of Münster, Bernhard von Galen (nicknamed “bomb Berend”), we chose a German recipe from the 1676 “gun, fireworks and gunsmith art” guide of Kazimierz Siemienowicz (Kazimierz Siemienowicz, “Caput XII: Von den stinckenden Kugeln,” in *Vollkommene Geschutz-Feuerwerck- und Büchsenmeisterey-Kunst* [Frankfurt, 1676]).

Stink bombs were low-cost and high-gain. They were quite easy to make. No iron cannonballs were needed, and the substance could be bundled together in a clay pot. Most ingredients were not hard to find in a military context. Stink bombs were intended to cause great panic and incite the besieged to run away and retreat. According to Siemienowicz, they brought great discomfort to their targets as the human nose cannot stand bad fumes. They also corrupted the air for a considerable time after the bombing.

The stink bombs consisted of explosive components (sulfur, saltpeter, and charcoal) and odorous components. Some of these components were fetid in their original states (asafetida and stinking iris), and others would release foul smells when burned (tar and horseshoe nails). We can learn all this just by studying the list of ingredients. A representation of the scent could deepen our understanding of military olfactory tactics. However, we would learn little from the actual re-creation of the recipe, as this would mimic the smell of the bomb before ignition. For an olfactory interpretation of the bomb in use, without actually making and igniting a real bomb, we needed to translate the recipe.

For pitch, we used tar (accessible at do-it-yourself shops). The turpentine diluent in the tar also provided an olfactory equivalent for colophony, a glue-like resin. The ammonia scent of saltpeter we mimicked with castoreum, which also provided a sniff of the animalistic component of the horseshoe nails. However, as the intended olfactory effect here was not the clippings themselves but the sulfuric smother of burning nails and hair, we added birch tar, which has a distinct smoky smell. Sulfur, as explained previously, is not a fragrant component that you would freely offer to a public. We chose dimethyl sulfide, an organosulfur compound that gives a flavor of cooked cabbage, or algae in the sea. Sagapenum (*Ferula persica*) is a medical plant with, again, a sulfuric smell with coumarin components. Asafetida (“devil’s dung”) is a common spice in Indian curries. The stinking iris (*Spatula foetida*) was supposed to smell like malodorous bed bugs when crushed, but it was also an effective detergent against lice (“De bladen stincken als weegh-luy-sen,” Pieter van Aenghelen, *Herbarius, kruyt- en bloem-hof* [Amsterdam, 1663], 351).

For the fragrant scent, we tried to weigh the ingredients according to their quantitative representations in the texts. The most-mentioned smell words should be most dominant in the smell representation. The final scent should be fresh, embalming, and “peppery, awakening”—calling people to arms. One of the challenges was how to account for the often-mentioned “French

TABLE 1. Recipe for stinkpot scent

Seventeenth-Century Recipe		Olfactory Translation	
Ingredient	Weight	Ingredient	Weight
Black pitch	10 pounds*	Tar (Cetaveber)	15 grams
Harz pitch	6 pounds		
Saltpeter	20 pounds	Castoreum	2.4 grams
Sulfur	8 pounds	Dimethyl sulfide	10 grams
Colophony	4 pounds	Turpentine (in the tar)	
Charcoal	2 pounds	Metacresol	1.5 grams
Horseshoe nails	6 pounds	Birch tar	0.2 grams
Asafetida	3 pounds	Asafetida	6 grams
Sagapenum	1 pounds	Coumarin	1.5 grams
Stinking iris	0.5 pounds	Tea tree oil	1.2 grams
		Alcohol	150 grams
		DPG	150 grams

*A pound was around 480 grams.

lily,” a reference to the fleur-de-lis of the French coat of arms. The heraldry in question actually depicts not a lily but an iris—one of the most expensive perfume ingredients. Additionally, the indolic (musty, fecal) qualities of the lily’s scent connect better with the olfactory interpretation of the French fleur-de-lis: beautiful but threatening and undesired.

TABLE 2. Recipe for olfactory imagination of the fragrant scent of hope

Mentioned in the Text	Olfactory Translation	Weight
Orange blossom	Neroli nature identical essential oil	10 grams
Orange	Orange essential oil	10 grams
Musk	Synthetic musk: Galaxolide 50% IPM	1 grams
	Natural musk: Musk ketone	0.4 grams
Spikenard	Jatamansi-Nardus Himalaya essential oil	20 drops
French lily	Lily of the valley essential oil	4 grams
	Lily perfume, Holland Aromatics, 20/37501	2 grams
Peppery, awakening	Oregano	2 drops

Adding the olfactory layer of indolic lily also helps to communicate that while 1672 might later have been termed the Disaster Year, there were in fact many different perspectives on the events of that year. For the suppressed Catholics in the southern provinces, the French invasion was sometimes welcomed, whereas for many farmers, the inundation of their land as part of the waterline defense was the true disaster.

By drawing together olfactory re-creations (stink bomb), single-ingredient interpretations (lily and orange blossom), and olfactory imaginations (the smell of hope), we created the scent of 1672 as *lieux de mémoire*: a tangible and intangible space that may create a memory in the minds of those who took the scent home and sniffed it. In the meantime, a lot was learned about olfactory warfare and anxieties.



Figure 11. Historical olfactory imagination of the Disaster Year, 1672. Scent designed by Iscent and presented at the conference “Blood, Gunpowder and Tears: Meaning and Commemoration of the Disaster Year 1672,” Den Bosch, April 21, 2022. Inger Leemans, Jorg Hempenius, and Caro Verbeek, “1672: Een Geurplaats van Herinnering.”

Whose Noses Have Contributed to This Work?

The Odeuropa project is a transdisciplinary project that aims to expand academic knowledge through scientific and artistic cocreations. The project makes extensive use of external partners beyond the academy. We collaborate with museum curators and perfumers for our scent representations, we research olfactory heritage with intangible heritage practitioners, and our technical development depends on extensive input from student assistants. However, we also cross disciplines within the project. The humanities scholars in the project are intensively involved in the development and evaluation of the data sets, annotation guidelines, ontologies, and demonstrators produced by the computer science members of the Odeuropa team. How do we account for all this input when we publish our work?

To answer this question, we must first address another pressing query: What *is* a publication? In many academic communities, output indicators are under review. Monographs, edited volumes, peer-reviewed articles, and lectures are now listed next to “societal products,” “impact case studies,” and “knowledge exchange” while we seek out new forms of academic reward and recognition. In the next issue, we will talk about data sets and software as publications, but for now, let us think about *scent as a publication*. Can historical smell representations be listed as scientific output? The olfactory heritage library that Odeuropa is developing consists of scents that are well documented, describing the ingredients, scent development methodologies, and historical contexts. As we hope to show with this contribution—and in other work published by project members—historical scent representations can be regarded as valid historical statements. They can be evaluated along the lines of authenticity, convincingness, and knowledge expansion (improvement toward the state of the art). They can be compared with museum exhibitions, or other outputs based on combinations of academic, artistic, and professional knowledge. We therefore should be able to register historical scent representations in our reference management systems and research excellence frameworks so they can be taken into account for reviews and evaluations. We should also be able to register the multiple authors involved in producing a scent, including perfumers as well as scholars.

However, between ideal and reality lie rules, regulations, and practical hindrances. Firstly, the documentation of scents is a delicate balancing act between scholarly and industrial practices. The academic ideal of open science and careful documentation would encompass the open publication of the complete formula of a scent. However, many lead players in the scent industry are less eager to disclose their creations to this level of detail. Intellectual ownership of fragrances is a delicate matter. So far, most attempts to claim ownership of scents have been pursued through trademark law, where the application of a scent to a product (e.g., fresh-cut grass to a tennis ball or roses to a car tire) can

be trademarked but the scent itself cannot (Laura Gow, “Creating a Stink?,” *Business Law Review* 28.4 [2007]). Copyright offers another route to legal protection. However, national and international courts are divided over the question of whether a perfume or a fragrance—think about detergents, soaps, or scented commercial spaces, such as bookshops or hotels—can be protected by copyright law (Sebastian Rengshausen, “Possibilities for the Protection of Scents and Fragrances,” in *Belle Haleine*, ed. Museum Tinguely [Heidelberg, 2015]). Yes, say some, if it is an original artistic creation, a unique combination of idea, technical skills, and the concrete product. No, others rule, for smells are not stable forms and their originality (or similarity) is hard to assess objectively. Furthermore, if we grant copyright to perfumes, we also need to grant it to the smell of, say, certain kinds of toilet cleaner. Scents are both industrial products and artistic creations.

These hesitations also provide insight about the question of authorship. Perfumers and other scent designers often develop fragrances at the request of a company, under the brief and guidance of that company and with the fragrant ingredients and technology of the company. The ingredients used, such as synthetically produced molecules developed by the company, may be patented (Chandler Burr, *The Perfect Scent* [New York, 2007]; Antoon Quaedvlieg, “Copyright and Perfume,” accessed May 16, 2022, https://klos.nl/wp-content/uploads/2017/07/Quaedvlieg_Copyright_and_Perfume.pdf). Disclosing the full formula of the scent—a description of the substances and their ratios and components—would therefore disclose valuable information for competing branches. After careful thought and discussions with the companies in question, for our collaboration with larger firms, we have been encouraged to name the company, not the perfumer, and to work with “perfumer briefs” that require a detailed scent description without the disclosure of the actual formula. For our collaborations with individual scent developers and smaller independent perfumers, we can provide more-detailed recipes and list the names of the olfactory designers.

Lastly, we are challenged by the material form of our publications. Words can be printed, videos of lectures presented online, but how do we present historical smell representations to scholarly noses for sniffing and reviewing? Scents are hard to capture in words. Whiff-story therefore needs to find new pathways for publication. For this issue, we have added a scratch-and-sniff card and accompanying scent descriptions. Previously, Caro Verbeek distributed a smell kit to the reading committee of her PhD dissertation; James McHugh, a scholar of medieval India, deposited a collection of scents with his thesis; and Cecilia Bembibre also archived a smell kit with her bound doctoral thesis (Caro Verbeek, “Ruiken aan de tijd”; James McHugh, *Sandalwood and Carrion: Smell in Indian Religion and Culture* [Oxford, 2012], xvii; Cecilia Bembibre, “Smell of Heritage” [PhD diss., University College London, 2020]). Do-it-yourself smell assignments can be woven into textual descriptions of past scent experiences, asking readers to

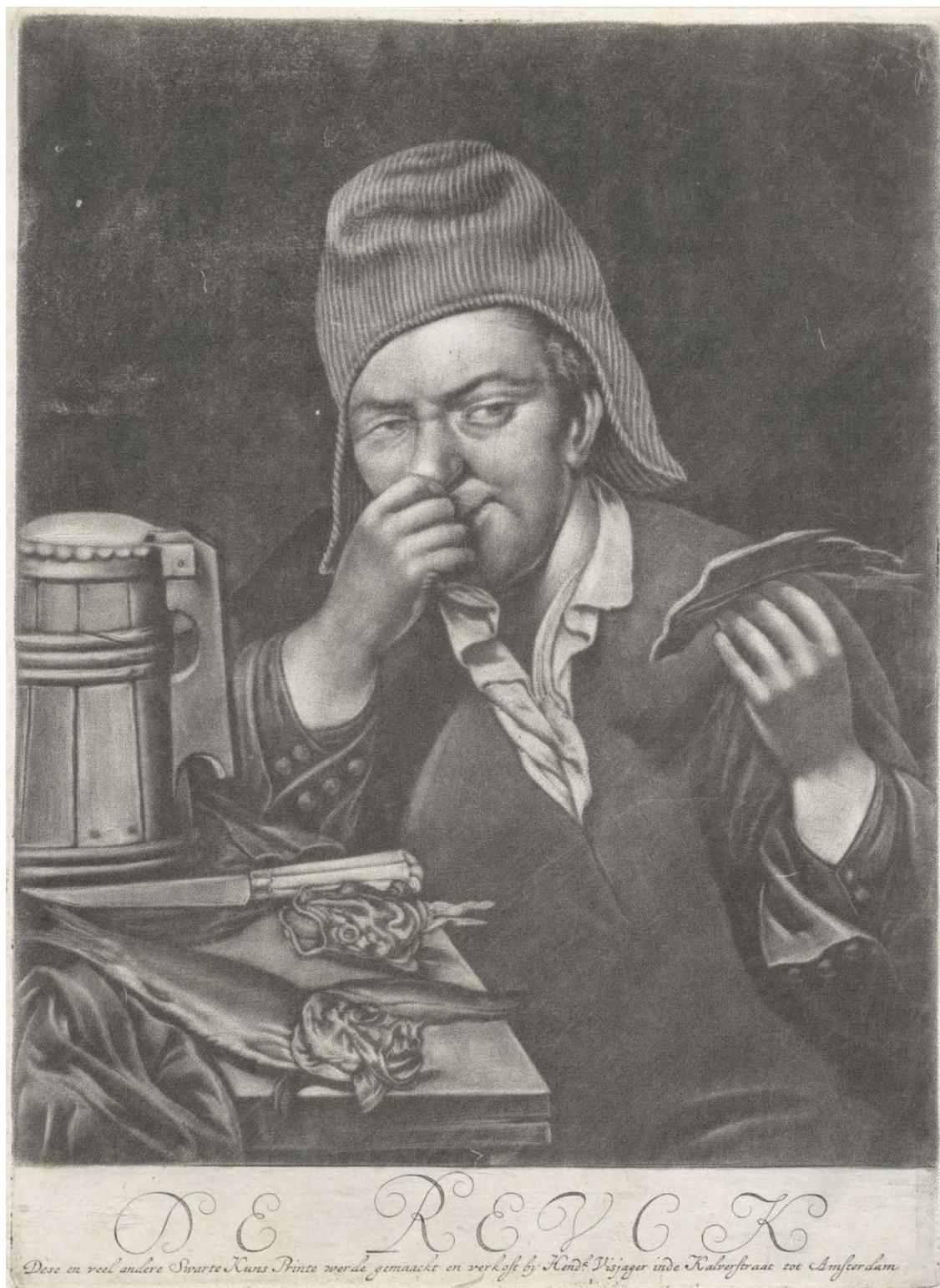


Figure 12. De Reuk, 1683–84, mezzotint on paper, 258 × 190 mm, RP-P-1910-1548, Rijksmuseum, Amsterdam.

sniff common materials or objects as they read (William Tullett, *Smell and the Past*). A heritage smell library could provide historians with an overview of historical scent developments. Students can then sniff their way through the centuries and learn by sensing. The soon-to-be-published nose-on Odeuropa-AHR online module “Knowing by Sensing” explores how we teach smell history and whether we can help teachers and students pick up on these new embodied learning processes (Inger Leemans, William Tullett, Cecilia Bembibre, Kate Mclean, Sofia Ehrich, and Caro Verbeek, “Knowing by Sensing: How to Educate Smell History (and Why Would You)? A Nose-On Online Module Presented by the Odeuropa Project,” forthcoming). The better able we are to bring smell into the training of researchers from the very start, the more likely it is that Whiffstory can grow into a scholarly field of exploration, documentation, and education.

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Inger Leemans is Professor of Cultural History at Vrije Universiteit Amsterdam and PI of NL-Lab, a research group on Dutch Culture and Identity at the Humanities Cluster of the Royal Netherlands Academy of Arts and Sciences (KNAW). She is also PI of the Horizon 2020 Odeuropa Project. Her research focuses on early modern cultural history, the history of emotions and the senses, cultural economy, and digital humanities, and she has published about the history of pornography, the (radical) Enlightenment, stock markets, and financial crises.

Lizzie Marx is an Art Historian at Pembroke College, University of Cambridge. She recently received her doctorate, titled *Visualising, Perceiving, and Interpreting Smell in Seventeenth-Century Dutch Art*. She also worked on the 2021 exhibition, *Fleeting—Scents in Colour*, at the Mauritshuis, The Hague. As a member of the Horizon 2020 Odeuropa project, she works on using AI to source historic imagery related to smell, and incorporating the olfactory in museum and heritage initiatives.

William Tullett is Associate Professor of Sensory History at Anglia Ruskin University in Cambridge. His first book was *Smell in Eighteenth-Century England* (Oxford University Press, 2019) and his second book, *Smell and the Past: Noses, Archives, Narratives* is forthcoming with Bloomsbury. He is a part of the EU-Horizon-2020-funded project, Odeuropa. As part of the project he is currently developing an online Encyclopaedia of Smell History and Heritage.