Check for updates

RESEARCH ARTICLE

REVISED NOMEN — A classification of methods used to create odourous compositions with a historical dimension: re-weighing, adapting, reconstructing, transposing, evoking

[version 2; peer review: 1 approved, 4 approved with reservations]

Isabelle Chazot[1], Érika Wicky[1,2], Sophie-Valentine Borloz[3], Chantal Jaquet[4], Alice Camus[5], Olivier David[6,7]

[1]Laboratoire de Recherche Historique Rhône-Alpes, Lyon, Auvergne-Rhône-Alpes, France
[2]Université Grenoble Alpes UFR Arts et sciences humaines, Saint-Martin-d'Hères, Auvergne-Rhône-Alpes, France
[3]Independant researcher, Lausanne, Switzerland
[4]Université Paris 1 Panthéon-Sorbonne UFR 10 Philosophie, Paris, Île-de-France, France
[5]Independent researcher, Paris, France
[6]Institut Lavoisier de Versailles, Versailles, Île-de-France, France
[7]Université de Versailles Saint-Quentin-en-Yvelines, Versailles, Île-de-France, France

v2 **First published:** 10 Dec 2025, **5**:383
https://doi.org/10.12688/openreseurope.21121.1
Latest published: 15 Sep 2026, **5**:383
https://doi.org/10.12688/openreseurope.21121.2

Abstract

The past decade has seen a proliferation of olfactory compositions and devices claiming a degree of mimetic connection to a vanished scent or atmosphere, whether in museum settings or the context of scientific, commercial, educational, or event-based initiatives. The aim is to offer visitors a direct sensory connection to the past. These endeavours differ significantly in both their objectives and methodologies as they may include to re-create a lost perfume for which we have the original formula, reconstruct an ancient fragrance through archaeological analysis, or draw inspiration from literary or visual sources to evoke the scent of a particular place or time. The specific objectives of a given project, such as commercial purposes, also shape the perfumer's brief. Despite their obvious differences, all such projects are often lumped together under the broad and vague label of "reconstitution," with little or no indication of the methodology used or the scientific grounding of the work. This ambiguity undermines the historical credibility of the scents and tends to blur the scientific rigour behind its creation, the expertise of the perfumer who formulated it, and the historical research that informed both. It is therefore essential to adopt a more nuanced terminology. With this aim in mind, and with the goal of mapping a highly dynamic and evolving field in which it has long played both an active and

Open Peer Review

Approval Status ? ✓ ? ? ?

	1	2	3	4	5
version 2 (revision) 15 Sep 2026		✓ view		? view	? view
version 1 10 Dec 2025	? view	? view	? view		

1. **William Tullett**, University of York, York, UK
2. **Barbara Huber**, Max Planck Institute of Geoanthropology, Jena, Germany
3. **Cecilia Bembibre**, University College London, London, UK
4. **Ran Yue**, City University of Hong Kong School of Creative Media (Ringgold ID: 597007), Hong Kong, Hong Kong
5. **Neha Khetrapal**, Jindal Global University,

observer role, the Osmothèque, Conservatoire International des Parfums, tasked its multidisciplinary scientific committee with developing a nomenclature to document these various odourous compositions and their specific characteristics. This classification was to be based on objective criteria and was independently conceived, without any evaluative or promotional intent. The result is the NOMEN model: a bilingual framework with five categories that encompass most of the methods currently employed to create compositions with a historical dimension.

Keywords
Olfactory heritage, Olfactory reconstruction, scent of the past, sensory museology, historical perfumes, historical reconstitution, olfactory reconstitution, perfume of the past, classification of odorous compositions, experimental history

This article is included in the Marie-Sklodowska-Curie Actions (MSCA) gateway.

This article is included in the Horizon 2020 gateway.

Sonipat, India

Any reports and responses or comments on the article can be found at the end of the article.

Corresponding author: Isabelle Chazot (isabelle.chazot@gmail.com)

Author roles: Chazot I: Conceptualization, Data Curation, Formal Analysis, Funding Acquisition, Investigation, Methodology, Project Administration, Supervision, Writing – Original Draft Preparation; **Wicky É**: Conceptualization, Data Curation, Formal Analysis, Funding Acquisition, Investigation, Methodology, Writing – Original Draft Preparation; **Borloz SV**: Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Writing – Original Draft Preparation; **Jaquet C**: Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Validation, Writing – Original Draft Preparation, Writing – Review & Editing; **Camus A**: Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Visualization; **David O**: Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology

Competing interests: No competing interests were disclosed.

Grant information: This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No [845788]("Intoxicated by turpentine": An Olfactory History of Painting (1750-1939) [PaintOdor]) and also ANR funding (Junior Professorship "Olfactions") Grant number: ANR-23-CPJ1-0035-01.
The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Copyright: © 2026 Chazot I *et al*. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

How to cite this article: Chazot I, Wicky É, Borloz SV *et al.* **NOMEN — A classification of methods used to create odourous compositions with a historical dimension: re-weighing, adapting, reconstructing, transposing, evoking [version 2; peer review: 1 approved, 4 approved with reservations]** Open Research Europe 2026, **5**:383 https://doi.org/10.12688/openreseurope.21121.2

First published: 10 Dec 2025, **5**:383 https://doi.org/10.12688/openreseurope.21121.1

REVISED **Amendments from Version 1**

Following the reviewers' comments, we revised the manuscript in order to clarify the scope, methodology, and conceptual positioning of the NOMEN framework. First, we refined the overall framing of the article by emphasising that NOMEN is intended as a descriptive, non-evaluative, and non-prescriptive tool designed to document contemporary practices of historically inspired olfactory creation. Expressions suggesting objectivity or rigid categorisation were moderated, notably by replacing references to "objective criteria" with "explicit and transparent criteria."

We also nuanced several formulations concerning the relationship between scent and the past. Statements implying direct sensory access to history or the "collapse" of temporal distance were reformulated in order to acknowledge the diversity of curatorial intentions, mediations, and audience receptions involved in olfactory heritage projects. Similarly, we clarified further that the significance attributed to historical scents is culturally situated and historically constructed.

Several revisions addressed methodological ambiguities within the NOMEN categories. In particular, we clarified the distinction between adaptation and reconstruction by specifying that categories are defined according to the dominant methodological claim rather than the exclusive use of a single type of source. We also introduced a distinction within reconstruction between projects based on residual olfactory continuity and those relying solely on inferred molecular evidence. Hybrid and borderline cases were reformulated more cautiously in order to highlight the flexible nature of the framework.

Finally, we strengthened the section devoted to the radar charts by clarifying their comparative function, acknowledging the interpretative dimension involved in attributing values, and suggesting possible additional criteria for future developments. Overall, the revised manuscript now presents NOMEN as a reflexive and adaptable framework grounded more explicitly in methodological transparency.

Any further responses from the reviewers can be found at the end of the article

Scents of antiquity, atmospheres of Symbolist salons, 18th-century wig powder, or incense from Imperial China: recently, we have seen a proliferation of olfactory compositions and devices claiming a degree of mimetic connection to a vanished scent or atmosphere, whether in museum settings or the context of scientific, commercial, educational, or event-based initiatives.[1] The aim is to offer visitors a direct sensory connection to the past, with varied objectives: sometimes to reduce the perception of temporal distance—even if only momentarily—by allowing them to physically experience the air of a bygone era; at other times, on the contrary, to make that distance more apparent, thereby engaging different forms of sensory interaction with historical contexts; and sometimes simply to raise awareness of specific aspects of material history.

These initiatives have the obvious advantage of promoting olfactory education and culture among the public while also drawing attention to the sensory dimension of history by highlighting it within the broader perspectives both of the history of the senses and history through the senses. By engaging with the past through the sense of smell, they align closely with the immersive and experiential approaches that are becoming increasingly central to cultural and scientific mediation and particularly valuable in a context in which museums are confronted with a widespread crisis of attention (Antoine-Andersen, 2021). They focus on the need to identify and preserve olfactory heritage, while drawing on the expertise of perfumers who either preserve existing scents or create compelling contemporary interpretations. Indeed, given the ephemeral nature of olfactory heritage, its preservation often entails the creation of scents designed to evoke those deemed of considerable historical significance. Such recreations are themselves liable to become part of the contemporary olfactory heritage, insofar as products of present-day interpretative frameworks and institutional contexts, they testify to a distinctly contemporary drive to reproduce the scents of the past (Simonnot and Siret, 2014).

Despite the shared objective of heritagizing and highlighting the historical significance of these scents, the various approaches to implementing these scent with historical dimension are based on divergent assumptions and methods, depending on the historical sources they are drawing upon, the period under consideration, and the techniques being employed. These endeavours may include to re-create a lost perfume for which we have the original formula, reconstruct an ancient fragrance through archaeological analysis, or draw inspiration from literary or visual sources to evoke the scent of a particular place or time. But, however fascinating the tasks are, they differ significantly in both their objectives and methodologies. Likewise, the specific objectives of a given project, such as commercial purposes, will inevitably shape the perfumer's brief and influence which criteria are prioritised in the development of the scent.

[1]We would also like to thank perfumers Thomas Fontaine and Daniel Molière, who generously shared their experience and insights, helping to inform the writing of this article.

And yet, despite their obvious differences, these scents are presented with little or no indication of the methodology used or the scientific grounding of the work. Museums and exhibition spaces sometimes even bypass the process of olfactory reconstitution entirely, presenting scents labeled simply as "Kyphi" or "What you could smell in Versailles" without providing any information on the sources consulted, the techniques employed or the creative choices necessarily made to evoke a complex olfactory reality. This ambiguity undermines the historical credibility of the scents, as it is impossible to know exactly what is being smelled. It also obscures the uniqueness and value of each individual approach. Due to the vagueness of its designation, the terms "reconstituted scent", "scents of the past", "past fragrance" or, in French, "parfum du passé" tend to blur the scientific rigour and the creativity behind its creation, as well as the expertise of the perfumer who formulated it, and the historical research that informed both. It also creates ambiguities between odorant compositions that imitate perfumes and those that, by reproducing pleasant olfactory landscapes, are perceived as perfumes.

To avoid any misunderstanding regarding the status of these olfactory compositions claiming a historical dimension that can be smelled in museums and other cultural institutions and to better recognise the variety of expertise they involve, it is essential to adopt a more nuanced terminology, that distinguishes between the various approaches and highlights their specific characteristics. While some ambiguity between categories is inevitable given that lost scents are, by nature, elusive and difficult to objectify, this effort at classification is a necessary first step toward clarifying current practices. Doing so not only benefits the general public, but also the perfumers and experts involved in these reconstructions, along with the museums and cultural institutions committed to providing accurate and informed experiences. It is important to emphasise that this proposed nomenclature is neither evaluative nor prescriptive; the goal is not to measure deviation from some "ideal" original scent. If it were the case, the availability of historical sources or the similarity of modern materials to ancient ones would in itself determine the value of a given approach whereas this classification aims rather to highlight the historical research, but also the creative research and interpretation of perfumers necessary to present the scent of a vanished materiality or to account for the olfactory atmosphere of a historical period. By enabling the identification of the actors involved and the nature of their contribution, this approach should, in the longer term, lead to the recognition of perfumer's work and creativity or, at the very least, to the proper crediting of each contributor's work.

Whether we speak of historical olfactory reconstitutions, olfactory compositions with historical resonance, or reimaginings of past scents, each of these approaches has genuine value. Audiences will be able to more meaningfully engage with them if they understand what kind of work is being presented. For this reason, we believe it is essential to develop a vocabulary that articulates the different ways of bringing lost scents back to life — and to raise awareness of the diversity of methods encompassed within the term "reconstitution." This lexicon may serve to guide the reflection of cultural institutional staff seeking to collaborate with perfumers, while also supporting mediation work with their audiences. It aims also to inform the reflection of anyone engaged with the creation or perception of such scents.

With this aim in mind, grounded in the experience of requests received from museal institutions, and with the goal of mapping a highly dynamic and evolving field in which it has long played both an active and observer role, the Osmothèque, Conservatoire International des Parfums, tasked its multidisciplinary scientific committee with developing a nomenclature to document these various odourous compositions and their specific characteristics. This classification is descriptive, based on objective criteria, it was independently conceived, without any evaluative ranking or promotional intent. The result is the NOMEN model: a bilingual framework with five categories that encompass most of the methods currently employed to create compositions with a historical dimension.

The Osmothèque is a non-profit organization founded in France in 1990 under the French 1901 law on associations, which remains to this day the world's only perfume conservatory and archive. Conducted in collaboration with researchers and perfumers, its mission is threefold: to preserve perfumes that have shaped (and continue to shape) the history of perfumery by recreating lost fragrances from original formulas; to share its collection, which now comprises over 6,000 perfumes, through public olfactory conferences; and to advance research on the history of perfume. As a pioneer in the preservation of olfactory heritage, the Osmothèque has taken a close interest in recent efforts to create historically informed scents and include many of them in its collections (for exemple, those created in the frame of the Odeuropa project). It thus came to acknowledge the need to map the various approaches involved. Emerging from the field of perfumery, whose specificities it addresses, the Nomen classification distinguishes various kinds of historically oriented olfactory compositions, perfume, scented products as well as olfactory landscape, which remain within its expertise insofar as they are scented compositions produced by perfumers.

Figure 1 - Illustration: Photography: Osmothèque, Conservatoire international des parfums.

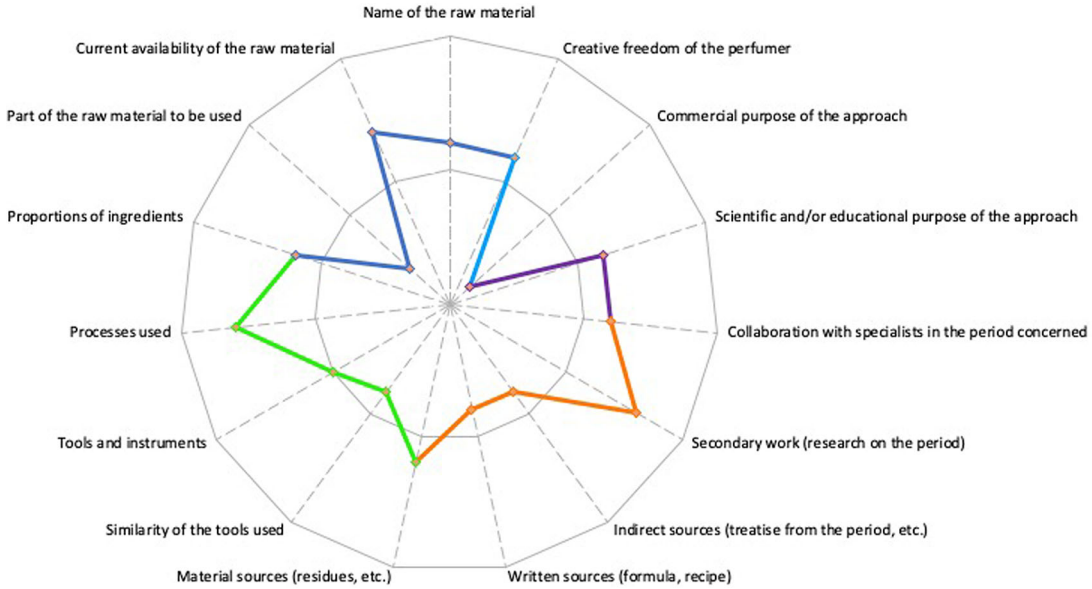


Figure 1. An example of graphical representation

Dialogue with the state of the Art

The NOMEN classification forms part of the critical approach to odorous compositions with a historical dimension, as the latter have become increasingly prevalent in cultural institutions. Despite their growing popularity, these compositions have received surprisingly little attention in the extensive literature on olfaction produced by scholars across multiple disciplines over the past decade. The fact that museology (Levent & Pascual-Leone, 2014; Deramond et al., 2020; Curatola, 2020) is one of the few fields to have acknowledged the scope of this phenomenon may reflect the relative absence of historians from the actual process of creating historically-inspired scents. While historians are often involved upstream (e.g., in suggesting olfactory elements for the perfumer to emphasise) or downstream (e.g., in contributing to interpretive materials for public engagement), they remain largely external to the creative phase itself, which is typically hidden within the private realm of the perfumer's expertise and practice (Marx et al., 2022).

Yet, as was previously noted, the very nature of the composition, and its appropriateness for the intended project, depend closely on the method used to build the scent and how its raw materials were chosen. The nomenclature presented here seeks to address a gap in the current research by documenting the actual procedures involved in composing these fragrances. This approach is grounded in current scholarly work: methodologically, through the categorisation of practices and a critical reflection on their boundaries, a process which has often revealed the complexity and diversity of large creative fields, as, for example, Gérard Genette demonstrated in his typologies of artworks (Genette, 1994). It also responds to the need expressed within the museum world to structure and conceptualise emerging immersive practices, as highlighted by the recent international symposium on "Museum Experience and New Immersive Devices" (France-Canada, October 10–11, 2024). Ultimately, the NOMEN classification emphasises that reconstituting past scents is far from a straightforward or monolithic process. Rather, it offers a framework for exploring the specific challenges and methodologies associated with each category in great depth, and in dialogue with a wide range of historiographical perspectives.

While the method referred to in the classification as *evocation* — a creative work inspired by the past (see below) is historically informed, it still allows significant room for the perfumer's imagination and can therefore be appreciated aesthetically as a contemporary artistic creation. Conversely, the *Reweghing* (*repesée)* approach, which aims to recreate original perfumes from the past as accurately as possible, opens the door to an aesthetic experience of a historical scent. The very notion that a perfume can constitute a work of art, and that smelling it can be an aesthetic experience, has long been debated, but recent research, notably by Chantal Jaquet (2010, 2018) and the team she assembled with Roland Salesse for the French National Research Agency's Kôdô project (Jaquet, 2015), has supported it. The artistic dimension of olfactory composition has also been explored in studies that have identified the emergence of a contemporary olfactory art form, with roots which can be traced back to the fin-de-siècle period (Shiner, 2020; Barré, 2021). In this regard, the classification proposed here serves as a bridge between historically oriented olfactory creations and part of the ongoing scholarly work on the intersection of art and scent.

Despite the creativity they require, historical olfactory compositions have rarely been considered from an aesthetic perspective, even though they can make meaningful contributions to ongoing debates between advocates of embodied sensory history (Hoffer, 2003; Chen, 2016; Tullett, 2023) and critics, who argue that modern perception is too far removed from that of earlier societies to serve as a foundation for historical understanding (Smith, 2007). Emily C. Friedman (2016), for instance, opens her book on literary representations of olfaction in the eighteenth century with reflections on her disappointingly unconvincing encounters with historical reconstructions.

While it is true that the evolution of our sensory frameworks limits direct access to past perceptions, experimental archaeology offers a compelling alternative. By replicating historical practices, it allows us to rediscover the techniques used by, and sensory engagement of, artisans and workers from earlier times, reconstruct production chains (Dupré et al., 2020), and reveal the role of the senses in craftsmanship (Sibum, 1995; Low et al., 2019). A clear illustration of this is provided by the blog post documenting the reconstitution of a 17th-century perfume based on a recipe by the Dutch diplomat Constantijn Huygens (1596–1687). Conducted as part of the European DURARE project (2022), the experiment not only illuminated the distillation techniques used to produce hydrolats, but also explored the many variables that affected perfume-making in the period, including the freshness and type of the plants used, and the conditions under which the resulting product was stored.

Reconstructions (see below) engage directly with historical and archaeological research aimed at identifying the nature of the raw materials involved. They rely on the most advanced scientific and technical tools available (Huber et al., 2022) and require a deep understanding of the history of scent-making techniques, particularly those used in the past to extract and process raw materials. In this respect, methodological reflection on olfactory reconstruction can draw valuable insights from the practices of art restorers, who are adept at analysing materials and reproducing varnishes, waxes, glues, and paints to preserve the material authenticity of artworks (Technè, 2008). These professionals also follow rigorous protocols to document their interventions and ensure the use of substances that closely match the original materials, both in composition and in compatibility, while adhering to strict safety and environmental protection requirements. This model of careful documentation and historically-grounded material reproduction offers a useful parallel for those working to reconstruct historical scents with scientific accuracy and integrity.

However, regardless of the historical insights which may emerge from the process of reconstituting a scent for historical purposes, they remain external to the scent itself. If these compositions carry historical significance, it is primarily through the processes they initiate rather than through the scent as an isolated object. The classification proposed here does not seek to evaluate the relevance of olfactory compositions as historical sources, but rather to describe and differentiate the various methods used to produce them so that they can be better understood, contextualised, and shared with the public. The aim of this classification is therefore also heritage-oriented, insofar as it seeks to acknowledge and document the diverse approaches used to preserve what researchers, institutions and perfumers have selectively identified and judged sufficiently significant to warrant recognition as olfactory heritage within contemporary heritage frameworks. By refining how we describe (and thus assess) the methods behind historically-inspired scent compositions, accounts more precisely for what has motivated the drive toward heritagization, thereby contributing more broadly to the preservation of heritage by incorporating into olfactory heritage the very traces of the reflection it has prompted.

This attention to sensory heritage aligns with some current research, notably the work conducted by Cecilia Bembibre at the Institute for Sustainable Heritage (University College London). Her doctoral thesis, *Smell of Heritage* (2020), is a key milestone in this field (Bembibre & Strilic, 2021, 2022). Through a series of case studies, she examines in-depth issues such as the identification and archiving of reconstructed scents (Bembibre & Strilic, 2017), and the evaluation of their perceived authenticity by the public. Building on this approach, Inger Leemans and the team behind the European project *Odeuropa* (2020–2023) have produced several historical scent reconstitutions and developed large-scale data mining tools to explore digitised textual corpora, identifying historically significant odours, and in some cases recreating them for use in museums. Considered as narrative and representational tools, these historically-motivated reconstitutions are now the focus of growing efforts toward transparency. A dialogue having been established from the outset between the Osmothèque and Odeuropa, the publications emanating from both research teams are complementary. In particular, the article *Making Whiffstory: Using Multidisciplinary Methods to Represent the Olfactory Past* (Marx et al., 2022) proposes a draft classification framework distinguishing between three types of historical sources (document-based, material- and knowledge-based, and artistic interpretation) and three types of olfactory targets (single ingredient, blended composition, and unpleasant odours). The Odeuropa team has also produced document entitled “Olfactory Heritage Toolkit”, in which guidance is offered to professionals from cultural institutions undertaking initiatives related to olfactory heritage (Bembibre et al., 2023).

The research undertaken to develop the NOMEN classification is grounded in a joint analysis of the methodologies employed by historians (who document the scents to be reconstructed) and perfumers (who carry out the actual reconstitution process). In doing so, it addresses a significant gap in the scholarship on odour compositions with a historical dimension. At the same time, it aligns with, and contributes to, ongoing research by engaging with recent studies on the history of olfactory culture and the preservation of olfactory heritage.

Scope of Application

Before presenting the different categories, a few preliminary remarks are necessary to clarify the scope and intent of the NOMEN model. First, this is not a classification of odours themselves, but a theoretical framework, which has been specifically designed to describe the methodologies used to create olfactory compositions that claim to have a historical dimension. By *historical dimension* in this context, we mean an explicit intention to recreate a lost scent that is known (or presumed) to have existed sometime in the past. Second, the classification is not limited to perfumes in the strict sense,[2] as it applies to all historical olfactory compositions in the broadest way. It is intended to encompass both efforts to recreate a specific perfume as faithfully as possible, and attempts to evoke the scent of a particular object, place, or environment from the past. Third, the model focuses on the methods, sources, and resources used in the creation process rather than on the olfactory outcome itself. It is therefore based on the most objective criteria available, avoiding any aesthetic or hedonic evaluation of the final product. Fourth and finally, the NOMEN classification is strictly descriptive; its purpose is to distinguish and highlight different types of creations, and not to judge or rank them. In short, NOMEN suggests a way to categorise any olfactory creation which has been brought into existence with the clear intention to reproduce a scent or perfume from the past, based on the information available about how it was produced.

The aim is to provide a useful tool for researchers, cultural institutions, and the wider public, while also enabling perfumers to define and communicate their own methodological approaches. By mapping the rapidly expanding field of historical olfactory reconstitutions, the classification opens up the diversity of expertise involved, underscores the methodological complexity of the work, and duly recognises the many contributors who make such reconstitutions possible.[3] The practical uses of this classification can reveal ambiguities and overlaps. These primarily reflect the complexity of the relationship between history, heritage, and scents, and it is therefore desirable to use them to highlight this complexity—for example, by associating two names of categories. We encourage everyone to appropriate this classification. Moreover, when an ambiguity arises, the choice made can reflect an intention to emphasize a specific aspect of the work that may have warranted closer attention. All uses of this classification seem acceptable insofar as they allow for a deeper reflection within the framework of creating mediation for the olfactory composition and provide more precise information.

The NOMEN Classification

Arranged along a continuum from the most complete and direct sources (offering the lowest degree of creative freedom) to the most indirect sources (allowing the greatest interpretive latitude) the NOMEN classification proposes five categories: reweighing, adaptation, reconstruction, transposition, and evocation. Each category is presented with illustrative examples below, not only to clarify the distinctions between them, but also to shed light on the specific challenges and underlying questions associated with each approach. At this stage, considerations bear solely on the methods of scent creation, while other aspects related to historically oriented olfactory compositions, such as the challenges surrounding modes of diffusion, are addressed in separate research.

Re-weighing

Re-weighing refers to cases in which the perfumer has access to a precise formula detailing the raw materials, proportions, and techniques which were originally used. This category concerns nominally identified perfumes, typically linked to a specific perfume house and perfumer-creator. Because it requires a formal and precise *formula* as opposed to a simple *recipe*, which tends to offer more approximate guidance (see "*Adaptation*"), this approach generally applies to fragrances created from the late 19th century onward.

While perfumers had long recorded their work in recipe form, often combining lists of ingredients with references to tacit, empirical knowledge, the emergence of standardised formulas in the early 19th century (which were widely adopted from the 1880s onward) marked a turning point. These formulas are distinguished by their consistent structure and the precise

[2]While many olfactory compositions claiming a historical dimension relate to perfume, which is understood here as a creation designed for hedonistic purposes, historical interest in smells cannot be limited to this definition. Moreover, in the strict sense, perfume refers to a pleasant scent, which inherently implies a value judgment based on perception, and therefore inevitably varies across historical periods and between individuals.

[3]It should be noted that "vintage" fragrances are not part of our field of investigation, as they are not "reconstitutions" but simply old fragrances that have been stored in a bottle for many years, and whose olfactory components have degraded to various extents over time.

documentation of both the ingredients and quantities. *Re-weighing* relies on the perfumer's ability to remain as faithful as possible to the original formula, emphasising accuracy over creativity. Most of the perfumes recreated by the Osmothèque fall into this category of *re-weighing.*

However, having access to a perfume's original formula is far from sufficient to complete a true *re-weighing*, as sourcing the specified raw materials can often be extremely challenging. For example, there is no guarantee whatsoever that a 2022 Centifolia rose absolute will smell exactly the same as one which was produced in 1910. While it would be unrealistic to recreate the precise natural environment in which the 1910 rose was grown, it is, however, possible to obtain the same species of flower and use the same extraction method, thereby minimising the variables as far as possible.[4] This example highlights the specific expertise required to evaluate and source raw materials, expertise that primarily lies with perfumers. Their deep knowledge of the history of perfumery allows them to infer, even when not explicitly stated in the formula, which type of rose absolute or essence was likely to have been used, and by which laboratory or perfumer, at a given time. Such professional insight is also crucial when dealing with rare or obsolete materials, whether they are of animal origin, discontinued natural extracts, or no longer produced synthetic compounds.

One of the major challenges in modern re-weighing relates to the use of *bases.* In perfumery, a base is a kind of "perfume core" — a pre-assembled accord sometimes designed to support a synthetic molecule (e.g., De Laire's *Mousse de Saxe*), or to replicate a natural scent (e.g., Roure's *Muguet 16*). These bases were commonly used as raw materials in their own right. The modern difficulty arises from the lack of available formulas for many of these bases; indeed, re-weighing perfumes that contain them can become impossible without that information. Fortunately, when archives have been preserved, some companies are able to re-weigh these bases and may donate small quantities to facilitate historical reconstructions. Collaborations of this sort, along with historical research (for instance, within industry archives such as the De Laire collection) have made it possible to recover valuable information about historical raw materials. Considering these obstacles, it is important to acknowledge that *re-weighing* can never result in a perfect reproduction of the original scent.[5] Moreover, perfumes — particularly those that rely heavily on natural ingredients — have always been "living" substances, which are inherently subject to climatic and biological variations. While the ideal of olfactory standardisation emerged from the technical and industrial advances of the 20th century, in practice it remains an aspiration, that can only ever be approached asymptotically.

Examples of true *re-weighings* are relatively rare. This is precisely the area of expertise of the Osmothèque — Conservatoire International des Parfums — which specialises in recreating perfumes as faithfully as possible to their original formulas, meticulously weighing each raw material with the highest possible precision. Since it was founded in 1990, the Conservatory has re-weighed approximately 300 perfumes using this method. Notable examples include *L'Origan* by Coty, re-weighed from an original 1905 formula, and *Le Fruit Défendu* by Parfums de Rosine (founded by Paul Poiret), re-weighed from its original 1914 formula. These perfumes are not intended for commercial sale; rather, they are presented as historical witnesses, underscoring their high value as elements of olfactory heritage.

Re-edition (sometimes referred to as "reformulation" by industry professionals) may appear similar to *re-weighing* in that it begins with an original formula. However, it differs fundamentally in its purpose, as its goal is to adapt the fragrance to the evolving standards and requirements of the contemporary perfume industry. This involves reworking the original formula to ensure compliance with current regulations, typically for commercial release. Many raw materials once used in perfumery are now restricted or banned, often due to concerns about skin allergies or other health risks, which means that the palette available to perfumers today is markedly different from a century ago. While IFRA (International Fragrance Association)[6] guidelines regarding toxicity generally do not apply to historical reconstitutions that are neither made to be worn nor sold, they are strictly enforced for all products intended for the market.

---

[4]Perfumers are accustomed to this variability in raw materials, which is a constant in their practice, even outside of any historical ambition, and therefore requires constant recalibration. In the context of historical reconstitutions, the importance of this parameter is even greater, as perfumer Daniel Molière explains: "*The reweighing must scrupulously respect all of this information (formula, suppliers, concentration in alcohol). The only leeway the perfumer can allow himself is to use a few ingredients of natural origin from a different geographical source, provided that a thorough olfactory check has been carried out beforehand between the original product and the replacement. It is normal to consider that natural products may have slight differences in scent from one harvest to another. Moreover, to smooth out these changes in the industry, manufacturing workshops have introduced the technique of "communelles." This does not mean that the olfactory result of the reweighing is considered different, otherwise it would be commonly accepted that every year, over the course of annual production, brands would market different perfumes (under the same name), and this is not the case.*" (Testimonial from Daniel Molière, Perfumer-Creator, head of the Osmothèque's cellar, December 2022).

[5]The term *"re-weighing"* could be compared to the term "identical reconstruction" used in the field of building restoration. Possible overlaps between the terminology used by NOMEN and terminology used in different restoration contexts (architecture, music, visual arts, etc.) will be the subject of a subsequent study.

[6]International Fragrance Association. "IFRA Standards Library." *IFRA – International Fragrance Association*, ifrafragrance.org/safe-use/library. Accessed 2 July 2025.

This key distinction justifies the use of a separate term in the NOMEN classification and highlights the significant influence that a commercial objective can have on the reconstitution process.[7] The constraints imposed by marketing (such as sanitary, regulatory, industrial, and promotional considerations) mean that olfactory fidelity to the original fragrance is no longer the principal concern.

Adaptation

Adaptation refers to a specific perfume or scented product (varnish, spices mix, etc.) for which the perfumer possesses a *recipe* (or several variations thereof) that contains imprecise information regarding raw materials, proportions, and techniques. To the existing indications, the perfumer must use their knowledge and experience to add some interpretation, experimentation, and creative input. These recipes often require the collaboration of historians, particularly to trace the techniques and contextual practices used at the time the recipe was written.

The term *adaptation* applies primarily to pre-1880 perfumery, as well as to domestic or artisanal perfumery practices (such as homemade preparations, scented sachets, etc.). The distinction between *re-weighing* and *adaptation* hinges on the difference between a *formula* and a *recipe.* A formula is understood as a precise, rationalised list of raw materials, complete with exact measurements (typically in grams), while a recipe is more akin to a set of "instructions for use" which generally lack a standardised structure or technical precision.

Adaptations are common, but they require a rigorous and methodical approach. The process is often complex, and the outcomes can vary significantly in their fidelity to the original. The older the recipe, the greater the degree of uncertainty — from identifying specific ingredients, to understanding historical extraction methods and sourcing natural materials as they were obtained in the past. In 1996, the Osmothèque — Conservatoire International des Parfums undertook the reconstitution of the "Royal Perfume," based on a recipe cited by Pliny the Elder in his *Natural History* (Book XIII, Chapter 2). The recipe lists 27 ingredients but provides no quantities for them, making the task particularly complex. Jean Kerléo, perfumer and the founder of the Osmothèque, spent over a year working on this adaptation. His first task was to identify the ingredients, then he had to source them, and finally conduct numerous trials, experimenting with different proportions of raw materials. This adaptation prompted extensive research and raised important questions about Roman perfumery, the cultural reception of scents in antiquity, and the potential differences in aesthetic perceptions between ancient Roman perfumers and contemporary ones.[8]

The *Seplasia* project, named after the marketplace in Capua where perfumers once made and sold their creations, was launched in 2011 by Jean-Pierre Brun and Xavier Fernandez. It led to the reconstitution of a jasmine perfume based on the recipe for *Iasmelaion*, as described by Dioscorides in *De Materia Medica* (Book I, §77). Following the recipe, jasmine flowers were macerated in oil, after which additional ingredients (myrrh, saffron, and cinnamon) were incorporated. The ancient method was reproduced as faithfully as possible. It is worth noting that this project also drew on chemical analyses of residues found during archaeological excavations, thus placing it within the *reconstruction* category of the NOMEN classification, while also relying on literary and iconographic sources, which align with the *transposition* category.[9] This example illustrates the fluid boundaries and complementarity between the different methodological approaches. NOMEN is intended to classify contemporary olfactory compositions that explicitly claim a historical dimension, whether these concern the recreation of historically attested perfumes or compositions that evoke past environments, practices, or smellscapes. We acknowledge that these referents are not ontologically equivalent and that their inclusion within a single classificatory framework reflects a shared contemporary practice of mobilising historical perspective in scent production.

A more recent example of *adaptation* is the previously-mentioned *Durare* project, led by Marjolijn Bol at Utrecht University. As part of this initiative, historian Ineke Huysman (Huygens ING/NL Lab) undertook the reconstitution of a perfume based on the letters of Constantijn Huygens (1596–1687), the Dutch diplomat, painter, poet, scientist, composer

[7]The term "re-edition" is sometimes internally replaced in publishing houses by the more technical terms "standardization" or "reformulation."

[8]In 2002, Philippe Walter, a researcher at the CNRS and the Centre de recherche et de restauration des Musées de France (C2RMF), and Sandrine Videault, an independent perfume creator, teamed up with cosmetics manufacturer L'Oréal to attempt to reproduce the recipe for Kyphi, the famous Egyptian perfume. The result was presented in Cairo, after many weeks of testing, at three exhibitions organised by the Cairo Museum, the Louvre Museum, and the Archaeological Museum of Marseille on the theme of "Perfumes and Cosmetics in Ancient Egypt". "Le kyphi : l'encens mythique des Égyptiens à nouveau créé" *Le Monde*, 4 avr. 2002, www.lemonde.fr/archives/article/2002/04/04/le-kyphi-l-encens-mythique-des-egyptiens-a-nouveau-cree_4244121_1819218.html. Accessed 2 July 2025.

[9]The diversity of resources mobilised in this project and the complexity of the process are excellent examples of how different categories can be combined, and of the value that the NOMEN model brings to the table by making the distinctions between these different approaches more explicit. Fernandez, Xavier. *Parfums antiques: de l'archéologue au chimiste.* PREAC Patrimoines et créativité, Réseau Canopé / Institut de Chimie de Nice (Université de Nice-Sophia Antipolis), octobre 2017. PDF, reseau-canope.fr/fileadmin/user_upload/Projets/.../Parfums_Antiques_XF_PREAC17.pdf. Accessed 2 July 2025 (Fernandez, 2017).

(and father of Christiaan Huygens) who was also a passionate amateur perfumer. From among the more than 150 recipes mentioned in his correspondence, the team selected one titled *"My mother's perfumed water",* which seemed particularly meaningful due to its personal and emotional dimension, reflecting Huygens' close relationship with his mother. The team attempted to adapt the recipe as faithfully as possible at Utrecht University's ArtLab. However, the numerous ambiguities in the original instructions ultimately led them to pose new questions about the ingredients, techniques, and broader context of 17th-century perfumery.[10] This example underscores how, by placing researchers in direct contact with the material and sensory dimensions of their subject, reconstitution projects[11] often open up new avenues of inquiry and generate fresh historical questions.[12]

These *adaptation* projects are currently multiplying all over the world.[13] Since 2021, Sean Coughlin, a researcher at the Czech Academy of Sciences in Prague, has been leading a five-year initiative entitled "Alchemies of Scent".[14] The project's main goal is to reconstitute five perfumes from the Greco-Egyptian period in order to better understand the cultural and technical exchanges which occurred between Greece and Egypt during the Ptolemaic era. Two additional objectives are to develop a lexicon of Greco-Egyptian perfumery and to expand scholarly knowledge of ancient perfumery practices.

Reconstitution is approached here as a form of experimental archaeology — a means of accessing the knowledge and gestures embedded in ancient craftsmanship. The project team refers to their method as *replication,*[15] highlighting the degree of interpretation always required when reading ancient recipes and the many variations that result from it. Fragrance outcomes depend not only on the listed ingredients, but also on their quality, the context of production (i.e., the time and place), and the skill of the perfumer. Therefore, several versions of each recipe are tested. Each year of the project is devoted to achieving a new creation: the production of *stakté* (an oil extracted from myrrh), recreating the Mendésian perfume, making *metopion*, the production of *sousinon*, and finally, creating an essential oil by distillation. This work is being carried out by a multidisciplinary research team composed of historians of science, chemists, and Egyptologists. At the time of writing, however, it appears that no professional perfumers have been involved. The same international group is also working on an *adaptation* of a Mesopotamian perfume attributed to Tapputti, a female perfumer at the Assyrian court in the 13th century BCE, whose partial recipe has survived on a cuneiform tablet.

When one or more of the raw materials listed in a historical recipe cannot be located or even precisely identified, the perfumer's approach typically involves approximating what they believe to be the materials and techniques of the time. This process inevitably includes a degree of trial and error, as well as personal interpretation, often resulting in multiple variants of the same perfume. These variants may also reflect a conscious effort to align the final scent with the olfactory preferences of the present day.

---

[10]DURARE Project (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." *DURARE Project*, last updated 9 May 2022, story.durare.eu/making-scents-of-the-past. Accessed 2 July 2025.

[11]We use the term *reconstitution* in a neutral and generic sense, without specifying the method.

[12]Another example is that of a project around the perfume said to be Marie Antoinette's (200) called the "Sillage de la reine" (Queen's Sillage), which was launched under the direction of the Palace of Versailles. In 2005, to accompany the release of Elisabeth de Feydeau's book, *Jean-Louis Fargeon, parfumeur de Marie-Antoinette,* the idea arose to create a perfume based on historical elements written by Parisian perfumer Jean-Louis Fargeon. The latter supplied the court in the 18th century and left behind a book containing various recipes. Using these sources, perfumer Francis Kurkdjian, then at Quest International, created a perfume. His work was not based on a specific recipe; rather, it was inspired by a collection of recipes. The perfume was created using natural ingredients, including rose, iris, jasmine, tuberose, orange blossom, cedar, sandalwood, tonkin musk, and ambergris. The communication around this project used the term "reinterpretation"; however, within the NOMEN classification, we prefer to use the term "adaptation." Source: Dossier de presse «Jean-Louis Fargeon, parfumeur de Marie-Antoinette», Château de Versailles, 2005.

[13]However, several examples of perfume reconstitutions—though presented as *adaptations* of ancient recipes—appear to be more accurately described as *evocations* (see below). For example, in 2024, Cenker Atila, an associate professor in the Department of Archaeology at Sivas Cumhuriyet University in Turkey, teamed up with Milanese perfumers and perfumer Bihter Türkan Ergül from the Fragrance Culture and Tourism Association of Turkey to carry out a project aiming to recreate ancient perfumes. They recreated Telinum, a perfume that may have been worn by Julius Caesar (to be more precise, it is associated with his name, but there is no evidence that he actually wore it). According to various popular science articles, which are the only sources we had access to, the research was based on ancient texts to determine the most prized and luxurious raw materials of the time. This perfume contains many raw materials, such as amber, mint, rose, lemon, bergamot, lavender, jasmine, water lily, violet, cedar, oud, iris flowers, etc. The name Telinum was chosen because it refers to a fragrant substance mentioned in several sources. This perfume has been on sale since October 2024 in Turkey, Italy, and France. Source: Altuntaş, Leman. "Famous Roman Dictator Julius Caesar's Perfume Recreated." *Arkeonews*, 2 Aug. 2024, arkeonews.net/famous-roman-emperor-julius-caesars-perfume-recreated/. Accessed 2 July 2025.

[14]Alchemies of Scent. *Alchemies of Scent*, Institute of Philosophy, Czech Academy of Sciences, 2021–25, www.alchemiesofscent.org. Accessed 2 July 2025.

[15]Alchemies of Scent. "Replications." *Alchemies of Scent*, Institute of Philosophy, Czech Academy of Sciences, [s.d.], www.alchemiesofscent.org/replications. Accessed 2 July 2025.

Updating ("Actualisation" in French) refers to the process of following a historical recipe while taking into account modern reception and evolving public tastes. The goal is to bring an old perfume *up to date* by offering a version that resonates with contemporary visitors, rather than presenting them with a strict, historically faithful reconstruction. This updating process may result from the perfumer's own training and aesthetic biases, but it can also serve an educational purpose.

Changes in scent perception over time, which are shaped by shifting trends in perfumery and a general lowering of olfactory tolerance thresholds (Corbin, 1982), can be somatically conveyed to today's audiences. Visitors may find certain smells unpleasant or overwhelming, even though they would not have been perceived that way by people in the past. In this sense, "updating" can act as a kind of *olfactory translation*, revealing nuances and subtleties that might otherwise be lost, or making historical scents more accessible to the modern nose. Conversely, updates can also be used to highlight a feature of the original perfume that was striking at the time of its creation but has since become commonplace, by intentionally amplifying that characteristic to bring it to the attention of contemporary audiences. When updates are intended for commercial use, it is important to emphasise that they are always approximations. In addition to adapting to current tastes, these versions must also conform to today's regulatory standards: as has been mentioned above, many ingredients originally used in historical formulas are now banned or restricted. As a result, perfumers are often obliged to modify the composition, replacing certain materials with modern substitutes, while striving to remain as faithful as possible to the spirit of the original fragrance.

Reconstruction

Reconstruction refers to the process of recreating a fragrance based on the analysis of physical residues, using scientific techniques such as chemistry, archaeobotany, and chromatography. This approach relies heavily on chemical analysis, gas chromatography coupled with mass spectrometry (GC-MS) in particular, to produce the most accurate possible inventory of the molecules present in a given sample. Archaeobotany can also provide valuable insights into the presence of specific plants, as well as the chemical markers of their degradation over time. However, it should be emphasized that residue analysis provides more or less precise historical datas depending on the age and the conservation of the samples. Just as more recent recipes offer greater precision and involve more readily identifiable raw materials, residue analysis yields results of varying accuracy depending on whether the residues themselves emanate (odorant or not molecules) or consist only of biomarkers from which the scent must be inferred. Reconstruction may sometimes be combined with *adaptation*, particularly when a historical recipe is available alongside the physical sample. Although it differs by relying wholly or partly on residue analyses, reconstruction, like adaptation, must sometimes contend with gaps in the data regarding compounds or ratios that require creative intervention.

One of the earliest examples of this approach involves the so-called *"Cleopatra's perfume."* In 2012, archaeologists Robert Littman and Jay Silverstein, both professors at the University of Hawaii, discovered an ancient perfume workshop dating back to the 3rd century BCE at the site of the ancient Egyptian city of Tell El-Timai. Among the finds were several glass bottles, some of which contained dried residues. The analysis of these materials led to the identification of several ingredients.

A PhD student in Egyptology, Dora Goldsmith (Berlin), and Sean Coughlin (Prague), were commissioned to recreate the perfume, using both the analytical data and recipes found in ancient Greek texts. The resulting fragrance contained myrrh, cardamom, cinnamon, and olive oil, and was showcased in an exhibition at the National Geographic Museum in Washington, D.C. In these examples, many questions remain.[16] In a similar vein, in another study published on August 31, 2023 in the journal *Scientific Reports*, archaeo-chemist Barbara Huber, in collaboration with a team of geo-anthropologists from the Max Planck Institute (MPI), analysed residues found on two canopic jars dating to around 1450 BCE. Using a combination of advanced chemical analysis techniques, she identified the substances used in the embalming of Senetnay, the nursemaid of the future Pharaoh Amenhotep II and attendant to Thutmose III. The jars, held at the August Kestner Museum in Hanover (Germany), revealed a complex blend used by priests to prepare someone for the journey to the afterlife: beeswax, vegetable oils, animal fats, bitumen, resin from pine family plants (likely larch), dammar or pistachio resin, and an unidentified balsamic substance. Although no formal *reconstruction* has yet been attempted, an *evocation* (see below) titled "Scent of the Afterlife", designed by scent-designer Carole Calvez, was created based on these findings. This fragrance draws upon both the analytical data and secondary sources related to mummification practices of the period, as well as the accumulated knowledge of researchers regarding the olfactory complexity of environments surrounding ancient mummies[17] (Huber et al., 2023).

---

[16]Daley, Jason. "Scientists Recreate Cleopatra's Favorite Perfume." *Smithsonian Magazine*, 30 July 2019, www.smithsonianmag.com/smart-news/scientists-recreated-cleopatra-favorite-perfume-180980126. Accessed 2 July 2025.

[17]Some recipes of the same period might also have been studied. It can be observed that boundaries between categories are often difficult to establish. In this case, while the composition was informed by scientific findings (archeological and chemical), it did not claim to reconstruct a historically attested recipe, but rather to translate analytical knowledge into a contemporary interpretative composition.

Further examples of *reconstruction* can also be found in more recent historical contexts. In a project conducted with scent historian Annick Le Guérer, perfumer Dominique Ropion used GC-MS analysis to study the contents of a perfume bottle discovered in the bathroom of writer George Sand (1804–1876). Based on the findings, Ropion recreated the fragrance, which was deposited at the Osmothèque in 2011.[18] Looking ahead, the development of Artificial Intelligence, and particularly its potential to identify degraded molecules, may further enhance the power, precision, and possibilities of olfactory reconstruction.

Transposition

Transposition refers to the creation of an olfactory composition intended to evoke elements (either implicitly or explicitly olfactory) found in a literary or pictorial representation. The goal is to bring to life a *represented* scent (such as that of roses depicted in a painting) or an *imagined* olfactory environment, like the smell of the Battle of Waterloo or an Amsterdam canal. The objective is not to reproduce a historically attested scent, but to suggest what the scene might have smelled like, whether it has been derived from a text or an image. While heavily reliant on the creative interpretation of the perfumer, *transposition* also draws upon historical sources and must meet a mimetic aim: to simulate a plausible olfactory reality.

From April to July 2022, the Prado Museum in Madrid hosted an exhibition entitled *The Essence of a Painting. An Olfactory Exhibition*, centred around *The Sense of Smell* (1617–18) by Jan Brueghel the Elder and Peter Paul Rubens. The painting, which features over 80 plants and flowers, as well as animals with a strong sense of smell such as dogs and guinea pigs, inspired the curators to include scent as a sensory complement to the visual artwork. The depiction of perfumed gloves and fragrance-related objects further encouraged the idea of recreating a historical glove scent. Perfumer Gregorio Sola (Puig) therefore developed ten scents for the exhibition, which were diffused into the gallery through four scent dispensers. He also created a free *adaptation* of a 1696 recipe for scented gloves. A commercial version of this scent has since been released, making it an example of *updating* (see above). In another instance of *transposition*, the Odeuropa research group created an olfactory composition inspired by Jan van der Heyden's painting *View of Oudezijds Voorburgwal with the Oude Kerk* (old church) *in Amsterdam* (1670), housed at the Mauritshuis Museum in The Hague. Here, the perfumer used visual and contextual clues to reconstruct what 17th-century passers-by might have smelled along the canal. The resulting fragrance blended impressions of damp stone, animal waste, and blooming linden trees.

Due to its inherent flexibility, *transposition* can result in a wide range of interpretations, some leaning closer to *adaptation*, and others to *evocation*, depending on the nature and specificity of the sources used.[19] To account for this diversity, the NOMEN classification includes a subcategory*: atmospherization.*

Atmospherization refers to a specific form of transposition focused on the smell of places. It aims to recreate the olfactory atmosphere of a particular space at a given moment in history, using a variety of sources, which can include textual descriptions, visual depictions, and historical data, sometimes also supplemented by modern techniques such as headspace analysis. Depending on the availability and type of source material, *atmospherization* may align more closely with either *reconstruction* or *transposition.*

Several *atmospherization* projects have emerged from the European Odeuropa initiative, which places olfactory heritage at the heart of its research. One notable example is the "Beuning Room", which is described as *"an olfactory transcription of an 18th-century Amsterdam bourgeois interior"*. This composition includes three distinct olfactory facets representing the room itself, the home, and the street outside — a reflection on the sensory overlap between private and public spaces in the urban environment of the time.

In 2024, a workshop at the École Polytechnique Fédérale de Lausanne (EPFL) digitised a 19th-century panorama depicting the Battle of Morat — a pivotal episode in Swiss history in which the Confederate armies faced Charles the Bold in 1476. The public presentation of this immersive digital experience included visual, auditory, and olfactory elements. Visitors were equipped with *"scented necklaces"* that released the smells of blood, sweat, and horse and goat dung, immersing them in the olfactory atmosphere of the battlefield. These scents were synchronised with the visual cues of the canvas, establishing an immediate mimetic relationship between what could be seen and what could be smelled, thereby intensifying the viewer's physical and emotional engagement with the panorama. Interestingly, the initial inspiration for this *atmospherization* reportedly came from 19th-century visitor complaints, as some viewers of that time expressed disappointment that the original panorama lacked scents which, they believed, hindered full immersion. While the

[18] *Les Nouvelles de l'Osmothèque,* n°60, January 2013, pp. 8–9.
[19] In certain borderline cases, the use of raw materials alone may form part of this "*transposition*" process. For example, to illustrate a painting depicting a kitchen, the smell of thyme or spices may be presented in a museum setting.

integration of scent into exhibition contexts remains a relatively recent step, it thus responds to a much older desire: the yearning for a multisensory encounter with the past.[20]

Evocation

Evocation refers to a work of imagination by a contemporary perfumer-creator, inspired by a work from the past. It relies almost entirely on the perfumer's own artistic vision, with historical references serving merely as points of departure or conceptual stimuli. The category encompasses original compositions that express subjective and personal interpretations of a past element. Unlike *transposition*, *evocation* does not aim for mimetic fidelity; instead, it openly embraces the mediation of the perfumer's imagination and emotional response to history.

While past influences can subtly inform any olfactory creation, what distinguishes *evocation* is the explicit acknowledgment of historical inspiration and its central role in the creative process. It is a category that encompasses a broad spectrum of compositions and fragrances, reflecting varied and often deeply subjective interpretations of the past.[21] The sources from which the perfumer works can be varied in nature.

An example of this approach can be found in a project from the Odeuropa research group in 2024.[22] A perfumer drew inspiration from Martin Schaffner's painting *Anastasis/Christ in Limbo* (1549, Ulm Museum, Germany) to create a scent evoking the imagined atmosphere of Hell as shaped by the collective European imagination. The resulting fragrance conjures up burning flesh, decomposition, dampness, flickering flame, and faint traces of sulphur — a combination designed to unsettle the recipient, to chill the spine. The goal was to tap into a deep reservoir of symbolic and cultural memory; rather than to recreate something literal, to provoke an instinctive, visceral response. This work differs significantly from the transposition based on *The Sense of Smell* (see above), in which identifiable olfactory elements (flowers, gloves, etc.) are visually present in the painting. In the case of *Anastasis*, the scent does not derive from anything directly pictured; instead, the perfumer starts from the emotional and symbolic resonance of the artwork in order to craft an entirely new, evocative experience.

Another example of *evocation* is when perfumer Carole Calvez set out to recreate the smell of Félicien Rops' studio for the exhibition *At Work: Artists' Studios in 19th-Century Belgium*, held in Namur between January and March 2024. Collaborating with specialists in the olfactory environments of 19th-century ateliers, she imagined the possible scents present in an artist's workspace of the time. Her approach combined historical knowledge of odoriferous materials typically found in studios (e.g., glues, pigments, and turpentine) with a more imaginative interpretation of what the atmosphere of a painter's studio might have been like (Calvez and Wicky, 2023). A particular sub-form of *evocation* is *illustration*, which differs in that it attempts to *olfactorily transcribe* a specific source, even when the source contains no explicit reference to scent. Examples such as translating the mood of an abstract painting or the emotion of an operatic aria into scent would fall under this category.

This leads to the question of whether such evocations retain a mimetic function. One example that raises this issue can be drawn from the Odeuropa project: Ellsworth Kelly's painting *Orange Blue* (1964, Ulm Museum, Germany) served as the basis for an olfactory composition. The perfumer attempted to render the impression of the painting's two dominant colours into scent: orange was represented by orange essence and C12 aldehyde, and blue by dihydromyrcenol and calone (as per publicly available notes from IFF). The resulting fragrance is an *illustration* of colour through olfactory means — an associative and interpretive exercise rather than a historical reconstruction. In such borderline cases, the claim to a historical dimension is more tenuous, underscoring the complexity of defining the boundaries of *evocation* within a heritage-oriented framework.

Graphic Representation

As we have seen, the NOMEN classification comprises five distinct categories: *Re-weighing*, *Adaptation*, *Reconstruction*, *Transposition*, and *Evocation.* It is structured according to a dual characterisation model: both textual and schematic. Alongside the lexical descriptions, we propose a visual representation system that enables users to quickly and clearly grasp the "profile" of each olfactory composition, thus facilitating comparison both across and within categories. To achieve this, we have developed a Kiviat diagram (or radar chart) model based on fifteen criteria grouped into thematic

[20]Fonds national suisse de la recherche scientifique. "Le Panorama de la bataille de Morat comme vous ne l'avez jamais vu" *FNS*, 3 juill. 2024, www.snf.ch/fr/VCNpQLtYGsusPPU5/news/le-panorama-de-la-bataille-de-morat-comme-vous-ne-lavez-jamais-vu.
[21]The aim of this article is not to provide an exhaustive list of the "evocations" featured in cultural spaces. The growing number of such initiatives in recent months would make this a particularly challenging task.
[22]Odeuropa et International Flavors & Fragrances (IFF). *Historical Scent Collection Booklet.* 2023, odeuropa.eu/wp-content/uploads/2023/12/Historical-Scent-Collection-Booklet-final-print-aproved.pdf

quadrants (see the Figures 1-5 below). The upper-left quadrant focuses on *raw materials*, while the lower quadrant contains *reconstitution techniques*. The two right-hand quadrants pertain to the *intentions* behind the project and the *types of external sources* involved. It is important to note that the boundaries between these segments are not rigid; for example, the faithful recreation of a historical recipe may require a degree of creative interpretation, while an artistic evocation that claims historical value often involves thoughtful consideration of materials or techniques. The purpose of the diagram is, therefore, not to rigidly categorise, but to highlight dominant trends and to sketch a characteristic "profile" of each olfactory work, based on the available information.

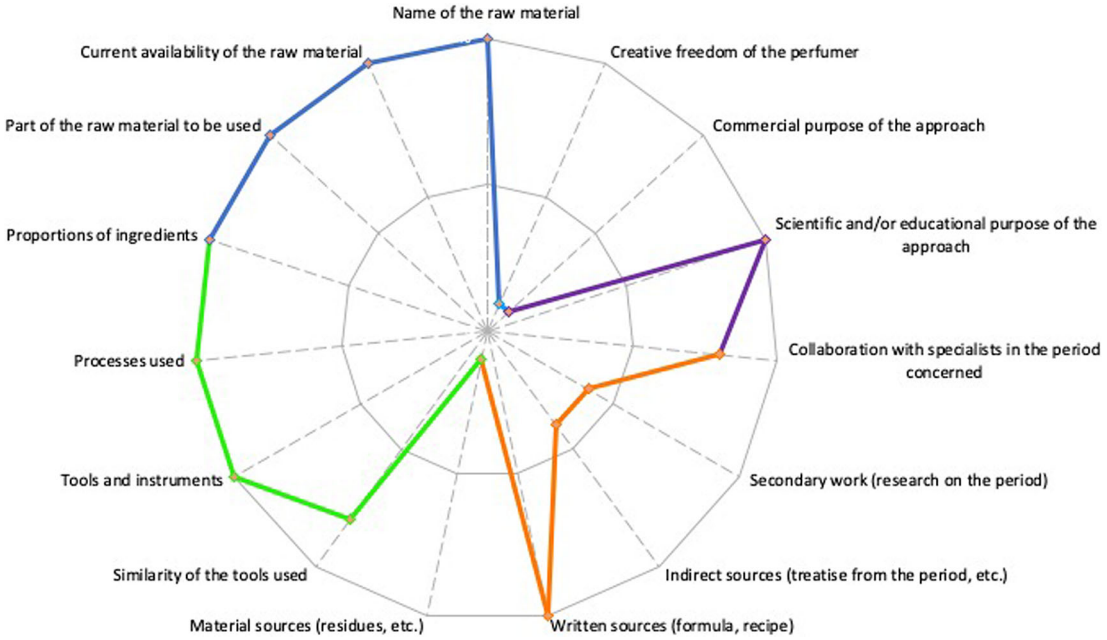


Figure 2. **An example of *re-weighing* (L'Origan).**

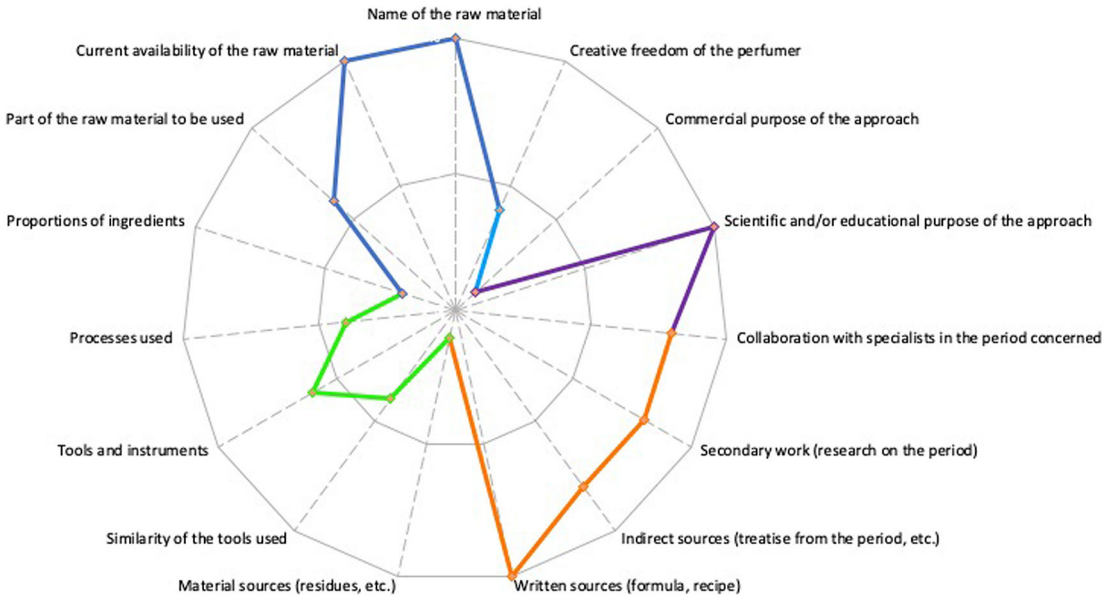


Figure 3. **An example of *adaptation* (Royal Perfume).**

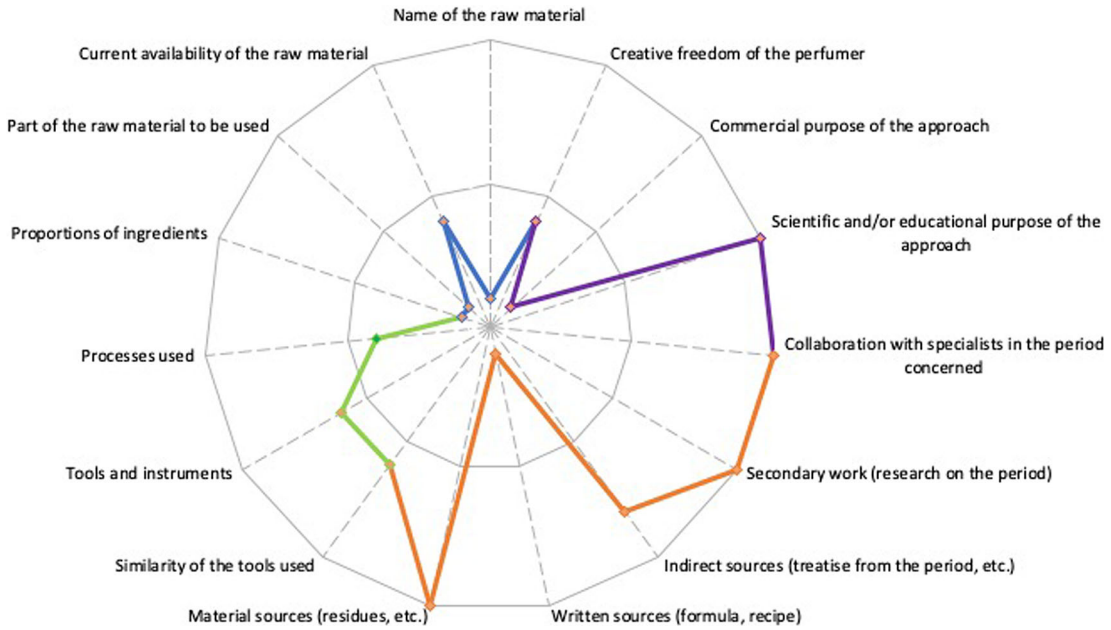


Figure 4. **An example of *reconstruction.***

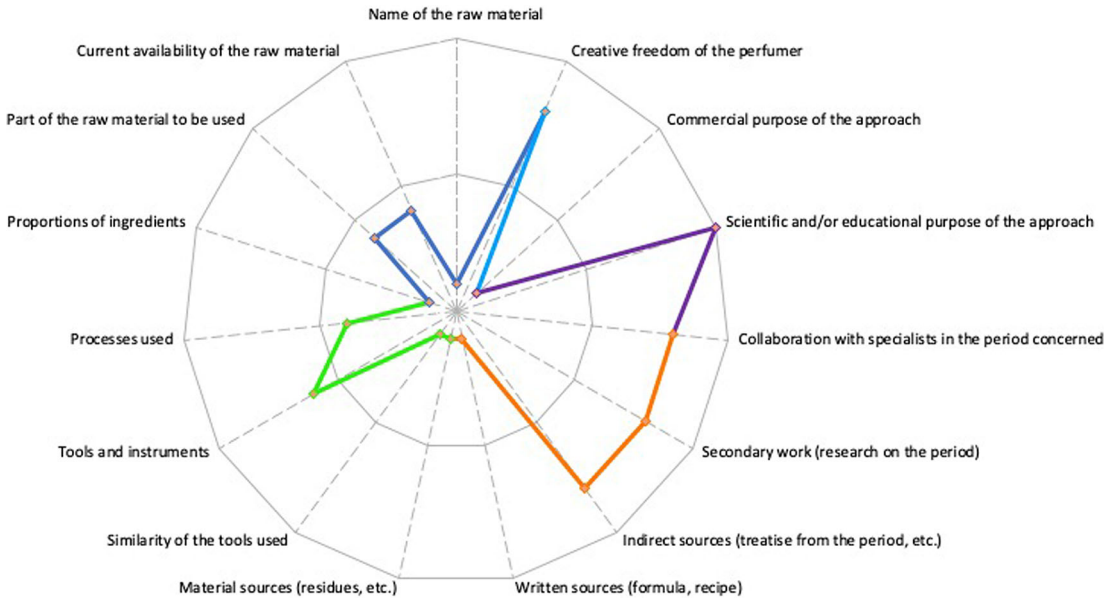


Figure 5. **An example of *evocation* (Hell).**

The criteria used for the segments are as follows:

Each criterion is assigned a score from 1 to 10, allowing its relative importance within the context of the specific project to be represented graphically.

Example of Graphical Representation:

Comparing the graphs provides a quick visual overview of the differences between several types of reconstitutions.

Examples: of *re-weighing* (L'Origan), of *adaptation* (Royal Perfume), of *reconstruction,* of *evocation* (Hell).

Top left quarter	Top right quarter
Name of raw material (materials and extraction method, specific or not) • Exact name 10/10 • Name of raw material without further details 8/10 • Vague reference to raw material 6/10 • Not relevant 1/10	Scientific and/or educational purpose of the approach • Scientific and educational purpose 10/10 • Scientific and educational purpose mixed with a commercial purpose 6/10 • Not relevant 1/10
Current existence of the raw material. • The raw material still exists and can be used 10/10 • The material no longer exists in its current form and must be replaced 4/10 • Not applicable 1/10	Commercial purpose of the approach • Commercial purpose 10/10 • Non-commercial purpose 1/10
Specification of the part of the raw material to be used (e.g., leaf, flower, or root of the same plant) • The part of the raw material to be used is precisely specified 10/10 • Due to a lack of precision, interpretation is based on a comparative element 8/10 • Due to a lack of precision, interpretation is an absolute 4/10 • Not applicable 1/10	Creative freedom of the perfumer • Complete freedom 10/10 • Partial freedom 6/10 • No creative freedom 1/10
Proportion of ingredients • The quantity is indicated precisely 10/10 • The quantity is indicated vaguely 8/10 • The quantity is not specified, so the interpretation is absolute 4/10 • Not relevant 1/10	
Lower left quarter	**Lower right quarter**
Processes used • Techniques are specified in full 10/10 • Some techniques are not specified and require interpretation 8/10 • No techniques are specified, so interpretation is absolute 6/10 • Not relevant 1/10	Material sources (residue, etc.) • Residue that can be used 10/10 • Traces provide partial information 6/10 • No residue 1/10
Tools and instruments • All tools are specified 10/10 • Some tools are not specified and require interpretation 8/10 • No tools are indicated, so interpretation is absolute 4/10 • Not relevant 1/10	Written sources (formula, recipe) • Complete formula or recipe 10/10 • Partial formula or recipe 6/10 • No formula or recipe 1/10
Similarity of tools used • All tools are identical 10/10 • Some tools are not identical and have been replaced 8/10 • No tools are identical and all have been replaced 1/10	Indirect sources (treatise from the period, etc.) • Research in contemporary perfume sources to fill in all gaps 10/10 • Research in contemporary perfume sources to fill in some gaps 6/10 • No specific research 1/10
	Secondary work (research on the period) • Research in existing works to fill all gaps 10/10 • Research in existing works to fill some gaps 6/10 • No specific research 1/10
	Collaboration with specialists in the period concerned • Collaboration with specialists in various disciplines 10/10 • Partial collaboration 4/10 • No specific collaboration 1/10

It should be emphasised that these graphical representations are approximations, and may occasionally lead to misinterpretation due to simplifications or distortions introduced by the arbitrary lines connecting the data points. Despite this limitation, they remain valuable tools, as they facilitate comparative analysis between different olfactory creations and help to visualise the defining characteristics of each category identified in the NOMEN classification. In particular, these graphs prove effective in the context of public engagement and mediation, especially when conveying the diversity and complexity of scent compositions created with a historical purpose or dimension.

The proposed scoring system is heuristic rather than metric, and the values attributed reflect structured qualitative assessments based on available documentation. There is indeed an interpretative dimension involved in the attribution of values. We insist on the fact that the purpose of the diagrams is comparative and descriptive, not evaluative. These graphical representations would benefit from including additional criteria and be adapted to different users and audiences. We hope that such improvements will emerge through use.

To conclude, we have chosen to take a step back and reflect on olfactory compositions with a historical dimension from a philosophical perspective. Chantal Jaquet, a member of the Osmothèque's Scientific Committee and Professor Emeritus of Philosophy at the University of Paris 1 Panthéon-Sorbonne (Jaquet, 2010) graciously agreed to share her thoughts on the subject with us.

CONCLUSION - In search of lost scents: the reasons behind a new passion

The NOMEN project reflects the spirit of our time, its concerns and focal interests.

The need to draw distinctions and establish a nomenclature in the field of historical fragrance reconstruction arises precisely from the proliferation of initiatives currently underway and the wide variety of methods and techniques being employed within them, a situation that sometimes leaves us wondering whether we are not being *led by the nose.*

Whether they are museum-based or commercial, scientific or educational, and recreational or instructive, the many ventures devoted to recreating the scents and perfumes of the past clearly reflect a present-day enthusiasm. This enthusiasm is shared both by perfumers, who seek inspiration to create new masterpieces, and by the general public, who flock to Versailles to follow *In the Wake of the Queen* and inhale the perfume known as *Marie Antoinette's scent*, or who rush to sample the *Queen of Hungary's water* along the *Promenade des Parfums* in Chamerolles.

Without quite becoming a fully-fledged social phenomenon, this fresh olfactory curiosity is undoubtedly in tune with the spirit of the times, and invites us to ask: what exactly sets our noses running? Regardless of the scientific rigour or intrinsic quality of these reconstitutions, we are entitled to ask: why do they fascinate us so deeply? What do they reveal about us and about our era?

The Counter-Proustian Olfactory Turn.

If we were to characterise the fragrant spirit of our time through the lens of these experiments, we would likely highlight what could be called a *counter-Proustian olfactory turn.* The 20th century was unmistakably Proustian, celebrating as it did the evocative power of scent as a trigger of memory, with the madeleine's aroma becoming the overused archetype, *ad nauseam.* In contrast, the 21st century appears to be reenacting that olfactory scene in reverse. We are no longer seeking to retrieve lost time *through* a scent, but rather to recover *lost scents* through time. In other words, scent is no longer the medium of memory; memory has become the medium of scent. Indeed, perfume reconstruction is now grounded in the tangible traces of the past that remain accessible to us: complete historical formulas detailing exact ingredient proportions, fragmentary recipes, indirect literary and historical references, and the molecules preserved in fabrics, objects, walls, or architectural surfaces. Thus, the classical question of *the scent of memory* is increasingly giving way to a new question: the memory of scent.

This *counter-Proustian* turn is not about opposing the author of *In Search of Lost Time* but about leaning on him to dig deeper into the domains of memory (and overturn them), by no longer starting from fragrant reminiscences, but from total or partial olfactory amnesia. It is therefore less about consciously countering him than about being *against him, very close against him*, to parody Sacha Guitry's famous phrase. We are thus dealing with a *"contre, tout contre Proust"*[23] approach which uses him as a point of departure to head in the opposite direction. To understand the rationale behind this olfactory shift, one that makes perfume the central object of memory research rather than a mere accessory, we must first pose transcendental questions about the conditions that make such a project possible.

[23]In French, "contre" means both "against" and "close to".

Material and Technical Conditions.

More generally, to fully pursue a passion, one must first have the material means to do so. This is why it is essential not to separate the *why* from the *how*, and to consider the technical systems and tools that are the *sine qua non* for the emergence of an interest in fragrance reconstructions. Given the current proliferation of such initiatives, it would be risky to quickly assume that this enthusiasm is a unique trait of our time — and, by extension, that previous generations simply did not care. Certainly, the historical marginalisation of the sense of smell in many cultures and civilizations has often favoured the sanitisation and eradication of odours over their preservation or reconstitution. Yet this has never extinguished the love of perfume — whether sacred or profane. The fact that fragrance formulas were often jealously preserved, precisely so they could be recreated over time, bears witness to this enduring fascination.

The challenge faced by our predecessors, however, was their lack of effective ways to capture and recreate scent due to its ephemeral nature. It is likely that our ancestors, just as curious as we are about the mysterious fragrance of Alexander the Great (which, legend has it, smelled divine) or Cleopatra's seductive perfumes, would have rushed to smell them too *if* they had possessed the means to reconstruct them. The advent of modern chemistry and molecular analysis, including innovations like headspace technology and gas chromatography coupled with mass spectrometry (GC-MS), has fundamentally changed the equation and opened up vast new possibilities. These techniques, which allow us to separate molecules and identify the volatile components of a fragrance (or its trace residues on clothing, objects, or architectural surfaces), have made it possible to attempt reconstructions that go beyond mere imaginative speculation in the absence of complete historical formulas.

It should be acknowledged that these powerful tools have some limitations, especially in terms of coping with the volatility of certain molecules, which evaporate more quickly than others. As a result, reconstructions often capture more of the base notes than the top notes of ancient perfumes, and can offer only a partial impression rather than a full recreation. The degradation of odorant molecules over time must also be considered. These techniques cannot compensate for the disappearance of certain raw materials, or for the lack of information about exact ingredient proportions as noted earlier in the discussion of the NOMEN categories. Nevertheless, we must acknowledge that the recent rise in interest around olfactory reconstructions is closely tied to the development of olfactometry and other cutting-edge technologies that now offer a glimpse of what once seemed irrevocably lost to time. In that sense, this trend is less the expression of a novelty than the revival of an ancient desire, made newly tangible by appropriate technical means.

The theoretical reasons behind the enthusiasm for olfactory reconstitutions.

However, having the means to satisfy a desire is not enough by itself to explain the emergence of a strong and sustained interest; there must also be compelling motivations to cultivate it. Without claiming to provide an exhaustive list, we can identify two main types of reasons behind this growing trend toward the reconstruction of historical perfumes: one theoretical and cognitive, and the other aesthetic and artistic.

The first reason is linked to the growing interest in osmology (the scientific and historical study of scent) both in its contemporary forms and in its traces from the past. This theoretical interest is closely tied to the rise of sensory anthropology, and more broadly to the ongoing rehabilitation of the senses — particularly smell, which, as is well known, had long been neglected and ranked lowest in the traditional sensory hierarchy. If nothing fragrant is now foreign to us, it is only natural that we will wish to seek out lost scents and enrich the historical and scientific understanding of perfume through reconstruction. In short, this renewed enthusiasm is one of the clear symptoms of the new epistemological status of the sense of smell in the 21st century. Once a marginal sense, smell has now moved to the forefront of scholarly attention — a shift accelerated by the COVID-19 pandemic, which made the effects of anosmia (loss of smell) starkly obvious and emotionally resonant for many people.

This overall cognitive approach is itself driven by different motivations, depending on the specific disciplines involved, such as the history of perfumery, archaeology, or sensory anthropology. The reasons for undertaking scent reconstructions inevitably vary according to the goals of each field. In perfumery, for instance, the revival of theoretical interest in historical recreations primarily follows a museological and heritage-driven logic, exemplified by the founding of the Osmothèque in Versailles in 1990, which from the outset has focused on faithfully reconstructing perfumes of the past. More recently, the Odeuropa project (2020–2023) sought to build a true *encyclopedia of scent*, cataloguing the smells and perfumes encountered in Europe from the 16th through to the 20th century. This cognitive approach is akin to the work of archivists and museum curators in other domains of knowledge and is not unique in itself. Rather, it represents a belated olfactory normalisation of the broader historical movement toward preserving traces, collecting data, and reconstructing information across multiple media. It is fully aligned with the contemporary logic of the accumulation, digitisation, and

dissemination of knowledge — a logic nowadays shaped by artificial memory systems, file storage technologies, and the expansion of digital capitalism.

While this search for olfactory archives also inspires archaeologists, their motivations and objectives differ from the aforementioned ones in important ways. In the archaeological context, reconstruction is driven less by the desire to retrace the history of perfume across the centuries than by the aim of understanding the history of a civilization — its ways of life, its material culture, and the social functions of the objects that surrounded it. This is exemplified by the research conducted by Barbara Huber and other German scholars, who have sought to reconstruct the scents associated with the embalming of ancient Egyptian mummies, the incense burned in Babylonian temples, and the fragrant atmosphere of domestic life from 4,000 years ago — examples discussed above in the section on "reconstruction". Recognising the central role of fragrance in pharmacopoeia, sacred rituals, seduction practices, and the establishment of social hierarchies, these archaeologists use perfume reconstruction as a means to make the spirit of an era perceptible, by literally offering it to be smelled.

In sensory anthropology, the focus shifts more toward the comparative analysis of cultural constructions of olfactory perception, and to highlighting how judgments and reactions to smells vary across time and context. The reconstruction of ancient perfumes enables us to explore the evolution of tastes and aversions in the realm of scent, revealing how our olfactory perceptions are shaped by customs, habits, and cultural context rather than by our physiology alone. For instance, Barbara Huber notes that in ancient Egypt, fish was considered to have such a foul odour that its corresponding hieroglyph symbolised *stench.* Likewise, someone smelling the *Queen of Hungary's Water* today might be struck by its strong rosemary note, which is more likely to evoke a kitchen aroma or the sun-scorched scrubland of the Mediterranean than the refreshing promise of a timeless elixir of youth.

In this case, the cognitive interest centres on the history of the cultural construction of the sense of smell. But whether the focus is on the history of odours, the history of civilizations, or the cultural history of the senses, the reconstruction of perfumes ultimately belongs to a gnoseological approach that seeks, in every instance, to build knowledge. Here, the desire to know is the symptom of a growing recognition of the dignity and importance of the olfactory world — past, present, and future.

Aesthetic and Artistic Motivations.

This cognitive interest, however, is not the only (nor perhaps even the primary) driver behind the burgeoning research in this field. Theoretical curiosity is often accompanied by a strong aesthetic and artistic sensibility, particularly among perfumers and connoisseur audiences. In this context, what motivates the endeavour is not so much the pursuit of perfect, formulaic reconstructions (*re-weighings*) than the poetic evocation and sensory commemoration of historical or iconic fragrances. Perfumers may seek to recreate scents from the past to nourish their artistic imagination, to discover new models of inspiration, and to draw on the audacity and originality of their predecessors in order to find the strength and confidence to invent fresh olfactory masterpieces of their own.

Though such a process may carry a hint of nostalgia, it is by no means retrograde. It is not a step backward; rather, it is a form of creative renewal and a reclaiming of the past, without which no future is possible — for nothing is created *ex nihilo.* These reconstructions do not follow a purely mimetic logic; they are not mechanical repetitions, slavish copies, or crude forgeries. Like a musical score, a perfume formula cannot be reproduced mechanically; it calls for interpretation, requiring the sensibility, skill, and inventiveness of the performer. In their quest for the lost perfume, perfumers often must display remarkable ingenuity in finding ways to evoke the scent of a natural ingredient that has disappeared, or replace a now-prohibited substance with an ethically or medically acceptable alternative.

In this sense, reconstructions are less reproductions than rediscoveries. And in *rediscovery* [*retrouvaille*[24]], we quite literally find the idea of *finding again*, which implies creativity within fidelity. Through such reconstructions, each bearing the unique imprint of its creator's style, perfumers may stake a claim to a prestigious lineage or assert a bold freedom of interpretation that places them among the greats. In so doing, they inscribe themselves into history, bathed either in the aura of their illustrious forebears, or in the brilliance of their rupture with past conventions of perfume composition.

[24]In French, "retrouvaille" is built on "trouver" and means reunion, getting together again.

Whatever the underlying motivations — which can range from a search for inspiration, an artistic statement, or a marketing strategy, to the commemoration of an exceptional event — these reconstructions always serve to celebrate the past; to rescue it from oblivion by making it *tangible to the nose*, or by interpreting it as an olfactory variation on a historical theme. Whether they are faithful or not, these reconstitutions awaken the public imagination and offer the illusion of a long-buried world rising from the bottle, as if by magic. They defy the irreversibility of time and bring pleasure by offering a dreamy fragment of a vanished era — misty, vaporous, and vaporised.

To *recreate in order to re-enchant* is the ultimate impulse behind these efforts. This hedonistic memorial pursuit may well be one of the most powerful forces driving the search for lost fragrances. In such moments of experiencing them, knowledge is joined by delight, and death is defied by the resurrection of a scent — a fleeting, fragrant fragment of eternity.

Despite the difference in cultural context, it may be illuminating to compare this form of pleasure to the experience described by a Japanese master of *kōdō* from the Shino school, who confided in a private conversation that, through *listening to jinkō* (a term referring to the inhalation of the breath of precious aromatic woods) he feels deeply united with all those who delighted in the same fragrances in times past. He described a sense of belonging to an olfactory community that transcends time, and of sharing the joy of that unique, fleeting moment with them. To feel connected across centuries to a chain of past generations, and to sense their presence through a perfume that envelops us and fuses us with them may be one of the keys to the mysterious appeal of restored fragrances.

Ultimately, the fascination with reconstructed historical perfumes is nourished by a desire for a kind of knowledge that is also a *co-nascence*, a shared birth that erases the boundaries of space and time between generations. It carries both memorial and emotional dimensions, in keeping with the very nature of olfactory sensitivity. Even if cognitive, aesthetic, and emotional motivations do not fully account for the appeal of such reconstructions, one thing remains clear: that olfactory reconstitution is neither lost time, nor recovered time — it is unknown time, given to be felt, without ever having been lived.

In an age where one piece of information displaces the next, where images scroll endlessly across screens, and where everything is marked by rapid evanescence, the nose anchors us in the invisible depth of a restored scent, that reconnects us to the world and to the shared human experience. To *reconstitute oneself through reconstitution* is perhaps the deeper reason behind our pursuit of the embalmed bottles of the past.

Ethics and Consent

Ethical approval and consent were not required.

Data availability

Not Applicable. This article provides a model for analysing odorous composition with a historical dimension.

References

Antoine-Andersen V: **Faire entrer le corps et l'attention au musée.** *La Lettre de l'OCIM.* 2021; **194**: 18–23.
Publisher Full Text

Barré S: *L'Odeur de l'art: Un panorama de l'art olfactif.* Bruxelles: La lettre volée; 2021.

Bembibre C, Strilic M: **From Smelly Buildings to the Scented Past: An Overview of Olfactory Heritage.** *Front Psychol.* 2022; **12**.
PubMed Abstract | **Publisher Full Text** | **Free Full Text**

Bembibre C, Strilic M: **Preserving historic smells: the question of authenticity**. *Mediality of Smells.* Perras J-A, Wicky É (eds.), Oxford: Oxford UP, 2021.
Reference Source

Bembibre C, Strilic M: **Smell of heritage: a framework for the identification, analysis and archival of historic odours.** *Herit Sci.* 2017; **5**: 2.
Reference Source

Bembibre C: *Smell of Heritage*. PhD thesis, University College London, 2020.
Reference Source

Bembibre C, Leemans I, Elpers S: ***Olfactory Heritage Toolkit.*** *Zenodo.* 2023.
Publisher Full Text

Calvez C, Wicky É: **Parfums d'ateliers fin-de-siècle: l'environnement sensoriel du peintre.** *Au travail ! Les ateliers d'artistes en Belgique au 19e siècle*. Catalogue d'exposition, Musée Félicien Rops/Silvana editoriale, 2023.
Reference Source

Chazot I, Camus A, Borloz S-V, *et al.*: **THE NOMEN PROJECT Classification of fragrant compositions for historical purposes.** *HAL Open Science.* 2023.
Publisher Full Text

Chen A: **Perfume and Vinegar: Olfactory Knowledge, Remembrance, and Record keeping.** *Am Arch.* 2016; **79**(1): 103–120.
Publisher Full Text

Corbin A: *Le miasme et la jonquille: L'Odorat et l'imaginaire social XVIIIe-XIXe siècles.* Paris: Aubier-Montaigne; 1982.

Curatola A: **EmozionArti pinacoteca multisensoriale suoni, profumi, sapori e sensazioni tattili alla scoperta dell'arte.** *Illuminazioni.* 2020; **52**.
Reference Source

Deramond J, Pianezza N: **'Avec les odeurs, vous pouvez réveiller des choses …': lorsque l'émotion s'invite dans la visite guidée au musée d'art.** *Culture & Musées.* 2020.
Publisher Full Text

Dupré S, Harris A, Kursell J, *et al.*: *Reconstruction, Replication, Re-enactement in the humanities and social sciences.* Amsterdam: Amsterdam University Press; 2020.
Publisher Full Text

DURARE Project, Bol M, van Daal J, *et al.*: **Making Scents of the Past: A Collaboration Between Het Geheugen van Geur and DURARE to Reconstruct a Seventeenth-Century Scent.** 2022.
Reference Source

Fernandez X: ***Parfums antiques: de l'archéologue au chimiste.*** **PREAC Patrimoines et créativité, Réseau Canopé/Institut de Chimie de Nice (Université de Nice-Sophia Antipolis)**, octobre 2017.

Friedman ÉC: *Reading Smell in Eighteenth-Century Fiction.* Lewisburg: Bucknell U. P., 2016.
Reference Source

Genette G: *L'Oeuvre d'art 1 Immanence et Transcendence.* Paris: Seuil; 1994.
Publisher Full Text

Hoffer PC: *Sensory Worlds in Early America.* Baltimore: Johns Hopkins U. P.; 2003.
Reference Source

Huber B, Larsen T, Spengler RN, *et al.*: **How to use modern science to reconstruct ancient scents.** *Nat Hum Behav.* 2022; **6**: 611–614.
PubMed Abstract | **Publisher Full Text**

Huber MP, Schiebel S, Grilj J, Zenz M, *et al.*: **Biomolecular Characterization of 3500-Year-Old Ancient Egyptian Mummification Balms from the Valley of the Kings.** *Sci Rep*. 2023; **13**(1): 12477.
Publisher Full Text

Jaquet C: *L'Art olfactif contemporain.* Paris: Classiques Garnier, 2015.
Reference Source

Jaquet C: *Philosophie de l'odorat.* Paris: PUF; 2010.
Publisher Full Text

Jaquet C: *Philosophie du Kôdô.* Paris: Vrin; 2018.
Reference Source

Low KEY, Abdullah N: **Sensory experience as method**. *The Oxford Handbook of the Sociology of Body and Embodiment.* Oxford: Oxford University Press, 2019.
Publisher Full Text

Levent N, Pascual-Leone A (eds): *The Multisensory Museum: Cross-Disciplinary Perspectives on Touch, Sound, Smell, Memory, and Space.* Plymouth: Rowman & Littlefield, 2014.
Reference Source

Marx L, Ehrich SC, Tullett W, *et al.*: **Making Whiffstory: A Contemporary Re-creation of an Early Modern Scent for Perfumed Gloves.** *Am Hist Rev.* 2022; **127**(2): 881–893.
Publisher Full Text

Shiner L: *Art Scents: Exploring the Aesthetics of Smell and the Olfactory Arts.* Oxford: Oxford University Press; 2020.
Publisher Full Text

Sibum, OH: **Reworking the mechanical value of heat: Instruments of precision and gestures of accuracy in early Victorian England.** *Stud Hist Philos Sci.* 1995; **26**(1): 73–106.
Publisher Full Text

Simonnot N, Siret D: **Héritage industriel et mémoire sensible: observations sur la con-stitution d'un"patrimoine sensoriel**. *L'Homme et la Société.* 2014, Le patrimoine industriel – Entre mémoire des lieux et marketing de la mémoire, n° **192**.

Smith MM: **Producing Sense, consuming Sense, Making Sense: Perils and Prospects for Sensory History.** *J Soc Hist.* 2007; **40**: 841–858.
Publisher Full Text | **Reference Source**

Technè: **Actes du colloque Science des matériaux du patrimoine culturel.** HS: 2008.

Tullett W: *Smell and the Past: Noses, Archives, Narratives.* Londres: Bloomsbury; 2023.
Publisher Full Text

Verbeek C: **Presenting Volatile Heritage: Two Case Studies on Olfactory Reconstructions in the Museum.** *Future Anterior: Journal of Historic Preservation, History, Theory, and Criticism.* 2016; **13**(2): 33–42.
Publisher Full Text

Open Peer Review

Current Peer Review Status: ? ✓ ? ? ?

Version 2

Reviewer Report 25 September 2026

https://doi.org/10.21956/openreseurope.25789.r81253

© **2026 Khetrapal N.** This is an open access peer review report distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

?

Neha Khetrapal
Jindal Global University, Sonipat, Haryana, India

The introduction establishes a compelling issue worthy of deliberation but it moves quickly to NOMEN. I would encourage the authors to elaborate on a few points, in particular, the reference to Gérard Genette: what exactly is being borrowed from Genette's account and how does this inform NOMEN?

As a reviewer, I would like to say that this work gives a useful vocabulary to a messy field! And, this is where the authors' strongest contribution lies. I particularly appreciate the fact that the authors do not treat the proposed categories (Re-weighing , Adaptation, Reconstruction, Transposition, and Evocation) as entirely rigid in nature. But, acknowledge overlaps. Furthermore, the paper is genuinely interdisciplinary.

Graphical Representation

This part for me, as a reader, stands out. I am left wondering whether the graphical representation is even necessary for NOMEN or whether it risks introducing a second classificatory layer that, in turn, is somewhat different from the preceding nomenclature. The five categories, in the preceding sections, are already differentiated and are replete with textual definitions and examples. However, this dimensional system shifts the reader towards a quasi-quantitative kind of comparison. I would, in this regard, encourage the authors to consider whether this graphical system might be more appropriately included as a supplementary tool rather than forming part of the main argument.

Where possible, the authors might want to consider including images of the examples that they have deployed to illustrate the categories of NOMEN. Visual material would help readers decipher the artworks and other materials through which the different categories are exemplified.

Is the work original in terms of material and argument?
Yes

Does it sufficiently engage with relevant methodologies and secondary literature on the topic?
Yes

Is the work clearly and cogently presented?
Partly

Is the argument persuasive and supported by evidence?
Yes

If any, are all the source data and materials underlying the results available?
Yes

Does the research article contribute to the cultural, historical, social understanding of the field?
Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Museums and olfactory heritage; olfactory artworks; History of the senses; material culture

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 23 September 2026

https://doi.org/10.21956/openreseurope.25789.r81099

© 2026 Huber B. This is an open access peer review report distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Barbara Huber
Department of Archaeology, Max Planck Institute of Geoanthropology, Jena, Germany

I would like to thank the authors for carefully addressing all my comments and for their excellent revisions to the manuscript. I have no further comments.

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Reviewer Report 22 September 2026

https://doi.org/10.21956/openreseurope.25789.r81260

© 2026 Yue R. This is an open access peer review report distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

?

Ran Yue
City University of Hong Kong School of Creative Media (Ringgold ID: 597007), Hong Kong, Hong Kong

This article examines the historical interpretation of odor composition in perfumery through lexical descriptions and visual representations. It highlights the scientific rigor and professional expertise underlying perfume creation and traces the associated historical research. It provides a valuable theoretical foundation for helping a broader audience understand the historical dimensions of perfumery, alongside its materials and technical details. Here I'm offering the following suggestions for improvement.

1. Engagement with relevant methodologies and secondary literature

- The explanation of "NOMEN" is insufficient. When searching for NOMEN, I found a related nomenclatural term, *nomen conservandum*. According to Wiki:
  A conserved name or *nomen conservandum* (plural *nomina conservanda*, abbreviated as *nom. cons.*) is a scientific name that has specific nomenclatural protection in that the name is retained, even though it violates one or more rules that would otherwise prevent it from being legitimate. *Nomen conservandum* is a Latin term, meaning "a name to be conserved." While "conserved name" and "nomen conservandum" are often used interchangeably, such as by the *International Code of Nomenclature for Algae, Fungi, and Plants* (ICN), the *International Code of Zoological Nomenclature* favors "conserved name." Hence, does "NOMEN" specifically refer to in the model presented in this article? Is it an abbreviation of "nomenclature"? A sentence or short paragraph clarifying the term would be helpful.
- The radar figures require a more rigorous explanation of how the fifteen criteria relate to the four thematic quadrants and, in turn, to the five categories: *Re-weighing*, *Adaptation*, *Reconstruction*, *Transposition*, and *Evocation*. For example, the figures for these five categories could be arranged in ascending order of creative freedom, following the rationale stated in the article:
  Arranged along a continuum from the most complete and direct sources (offering the lowest degree of creative freedom) to the most indirect sources (allowing the greatest interpretive latitude), the NOMEN classification proposes five categories: reweighing, adaptation, reconstruction, transposition, and evocation.
  A definition of "creative freedom," supported by relevant literature, should also be provided. Since "creative freedom of the perfumer" is itself one of the fifteen criteria, a detailed explanation of this term is particularly necessary.
- Relatedly, "creative freedom" serves both as a dimension used to define the NOMEN classification and as one of its fifteen descriptive criteria. Does this imply an interdependence—or potentially circular reasoning—between the dimensions used to define and describe the categories? Further methodological explanation and references

would help clarify this relationship.

2. Is the work clearly and cogently presented?

- Regarding the visual material, the text refers to Figures 1–5, but the figure captions begin with Figure 2; there appears to be no Figure 1. Arranging the figures for the five categories according to a consistent conceptual logic would also help communicate their relationships more clearly than presenting them as a list.
- Do the four line colors in these five figures represent the four thematic quadrants? If so, a shared legend within a combined figure is necessary. Alternatively, a single line color could be used, with the four quadrants and their associated scales distinguished in the background.
- Figure 6 does not load in the system; only the filename, "66855ec4-578f-4c42-9ec4-172672651937_figure6.gif," is displayed. Replacing the GIF with a PNG or JPG may resolve this issue.

3. Are all the source data and materials underlying the results available?

- As noted above, the clarity of the visual presentation should be improved. The list of fifteen criteria and four thematic quadrants should be formatted as a formal table, labeled "Table 1," and given an appropriate title.
- Where paintings, perfume creations, and other projects are discussed within the five categories, selected images could be included to encourage richer sensory associations, particularly connections between vision and smell.
- Both "Re-weighting" and "Re-edition" are discussed within the "Re-weighting" section. An introductory overview would help clarify their relationship. In particular, the statement that these two approaches have fundamentally different purposes should appear at the beginning of the section.

Is the work original in terms of material and argument?

Yes

Does it sufficiently engage with relevant methodologies and secondary literature on the topic?

Partly

Is the work clearly and cogently presented?

Partly

Is the argument persuasive and supported by evidence?

Yes

If any, are all the source data and materials underlying the results available?

Partly

Does the research article contribute to the cultural, historical, social understanding of the field?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Sensory perception, Soundscape, Smellscape, Urban environment

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Version 1

Reviewer Report 16 January 2026

https://doi.org/10.21956/openreseurope.22846.r66103

© 2026 Bembibre C. This is an open access peer review report distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

?

Cecilia Bembibre
University College London, London, England, UK

The article provides a useful classification of approaches for recreating or reinterpreting smells associated with what the authors describe as “vanished” scents or atmospheres, understood as historical olfactory experiences that are no longer directly accessible. This has the potential to be a timely and valuable contribution, particularly given the growing number of museum, research and commercial initiatives working with historic smells.

From the keywords through to multiple passages in the text, the authors consistently position the NOMEN framework as a contribution to olfactory heritage, referring to a “rich but often overlooked olfactory heritage,” to the Osmothèque as a pioneer in its preservation, and to the classification as a heritage-oriented effort to preserve the memory of meaningful past scents. Currently, however, it is not entirely clear the way olfactory heritage is conceptualised by the authors in relation to history. A brief exploration of this distinction would strengthen the conceptual grounding of the framework, for example by clarifying whether the classification is intended to address the 'recovery' of the past or the contemporary processes through which selected elements of the past are mobilised, curated and valued as heritage.

This issue becomes more pronounced in relation to the authors’ claim that “the aim of this classification is, therefore, also heritage-oriented in that it seeks to acknowledge and document the diverse approaches used to preserve the memory of meaningful scents from the past.” While this is an important ambition, the paper would benefit from greater contextualisation of what is meant by memory in this setting. It remains unclear whose memory is being preserved and on what basis certain scents are deemed meaningful.
The framework provides limited reflection on point of view and on the position of the “sniffer,” whether this is the perfumer, the curator or the visitor. This raises broader questions about how embodied experience, cultural framing and power relations shape olfactory representations, and

the authors are encouraged to address these dimensions more explicitly, to prevent the classification treating odours as transferable technical objects instead of situated experiences whose meanings emerge through practice, memory and interpretation.

The article also states that the classification is not limited to perfume in the strict sense and that it applies to historical olfactory compositions in the broadest way. In practice, however, the framework remains heavily centred on perfumery. The categories of re-weighing and re-edition are intrinsically perfume-based, and the examples discussed under adaptation, updating and reconstruction also concern perfumes. Only the final two categories, transposition/atmospherisation and evocation, explicitly engage with non-perfume experiences such as historical smellscapes derived from visual sources or multidisciplinary heritage research. It is in these latter categories that the article offers very valuable reflections on the relationships between smells, materiality, intention and temporal distance involved in bringing back historical olfactory experiences. This suggests the need to revisit or qualify the claim that the framework addresses historical smells in their broadest sense.

A further point concerns the positioning of NOMEN in relation to existing frameworks to represent smells of the past. More explicit engagement would clarify how the present classification aligns with, diverges from or extends earlier approaches, and would help to situate NOMEN more clearly within an emerging field of methodological reflection.

Finally, the proposed visual representation system using radar charts is a strong element of the paper and has clear potential for wider adoption, given their established use of these charts in both academic research on olfaction and in the flavour and fragrance industry. At present, however, these charts remain largely oriented towards perfume. The authors are encouraged to consider how the system might accommodate differences in the original form of the smell, whether this is a wearable perfume, an ambient installation or a smell emerging from materials or practices. Additional dimensions might include the intended purpose of the approach, such as interpretation, education or inclusivity and accessibility, the degree to which experts and non-experts are involved, and whether the smell is treated as an autonomous object or as an attribute of a material artefact, a practice or a space. In this respect, the classification of olfactory heritage proposed in the Olfactory Heritage Toolkit (Bembibre, C., Leemans, I., & Elpers, S. (2023). The Olfactory Heritage Toolkit. Zenodo. https://doi.org/10.5281/zenodo.10775277) could provide a useful point of reference.

Overall, the article has considerable value in mapping a rapidly expanding field and in offering a shared vocabulary for describing diverse practices. Its impact would be further strengthened by exploring the relationships between the different methodological approaches to bringing back historic smells and questions of authorship and authenticity in a heritage context, while acknowledging the adjacent body of work concerned with safeguarding smell as part of living heritage, which, although beyond the scope of the article, is nonetheless relevant to situate the framework more fully.

A few of minor notes:

- There is no Whiffstory Toolkit – there are however two articles with similar titles, one cited (Marx L, Ehrich SC, Tullett W, *et al.*: Making whiffstory: a contemporary re-creation of an early modern scent for perfumed gloves. *Am Hist Rev.* 2022; **127**(2): 881–893.) and one not cited (Refer Ref no. 1)

- I could not find a reference for the commercial release of the Guantes de Ambar scent from Gregorio Sola – it would be helpful to include it.

References

1. Leemans I, Tullett W, Bembibre C, Marx L: Whiffstory. *The American Historical Review*. 2022; **127** (2): 849-879 Publisher Full Text

Is the work original in terms of material and argument?

Yes

Does it sufficiently engage with relevant methodologies and secondary literature on the topic?

Yes

Is the work clearly and cogently presented?

Partly

Is the argument persuasive and supported by evidence?

Partly

If any, are all the source data and materials underlying the results available?

No source data required

Does the research article contribute to the cultural, historical, social understanding of the field?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: My expertise is in cultural heritage, with a particular focus on intangible, sensory and olfactory heritage.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 27 Apr 2026

Isabelle CHAZOT

We would like to express our sincere thanks to Dr Cecilia Bembibre for her constructive review of our manuscript. We are particularly grateful for her attention to the heritage dimension of the NOMEN framework and for her invitation to clarify the relationship between history, memory, and olfactory practice. Her comments have helped us strengthen the conceptual grounding of the article and refine its positioning within the broader field of

olfactory heritage studies.
1. Conceptualisation of olfactory heritage in relation to history We aknowledge the need to clarify how olfactory heritage is conceptualised in relation to history. In the revised article, we have clarified that NOMEN does not aim to "recover" the past in any straightforward sense, but rather to describe contemporary practices that engage with historically situated materials, narratives, and sensory imaginaries. We now emphasise that historically inspired scent compositions are themselves products of present-day interpretative frameworks and institutional contexts. In this sense, NOMEN addresses the methodologies through which are made attempts to reactivate the past and re-signify in the present, rather than presuming direct access to historical experience.
2. Memory and the question of significance In response to the reviewer's invitation to clarify what is meant by "preserving the memory of meaningful scents" and whose memory is at stake., we have revised the relevant passages to avoid any implication of a universal or self-evident notion of meaningfulness. We now specify that the significance attributed to particular scents is culturally situated and historically constructed, and that NOMEN does not determine which scents deserve preservation. Rather, it documents the methodological approaches through which certain scents are created and framed as historically meaningful by researchers, perfumers, and institutions. This clarification aims to avoid essentialising memory and to acknowledge that heritage-making processes inevitably involve acts of selection and interpretation.
3. Point of view and the role of the "sniffer" Regarding the reviewer's suggestion to address more explicitly the position of the "sniffer," whether perfumer, curator, or visitor, we have sought to preserve the focus of the article on methodology rather than expanding into a full discussion of audience reception, which we acknowledge as important but beyond the present scope of our study.
4. Perfume-centred framework NOMEN's framework applies to historical olfactory compositions in the broadest sense. In the revised manuscript, we clarify that NOMEN emerged from expertise developed within the field of perfumery. However, we explicitly state that the framework also encompasses compositions designed to evoke environments, practices, and atmospheres, even when these were not originally perfumes. We acknowledge that these referents are not ontologically equivalent and that their inclusion within a single classificatory model reflects a shared contemporary mode of producing historically oriented scent objects. In the reviewed article, we emphasised that NOMEN focuses specifically on the methodological processes of creating historically oriented scent compositions, whereas other frameworks—including the Olfactory Heritage Toolkit—address broader issues of documentation, preservation, and participatory engagement. This approach is part of an emerging methodological landscape and aims to enrich the discussion by providing opportunities for debate and progress.
5. About the graphical charts We have made it clearer in the revised manuscript that these graphical representations could include additional criteria and be adapted to different users and audiences. This will be an interesting topic to discuss in the future.

Competing Interests: No competing interests were disclosed.

Reviewer Report 13 January 2026

https://doi.org/10.21956/openreseurope.22846.r66102

© **2026 Huber B.** This is an open access peer review report distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

?

Barbara Huber
Department of Archaeology, Max Planck Institute of Geoanthropology, Jena, Germany

This article introduces NOMEN, a descriptive classification framework intended to distinguish different methods used to create odorous compositions with a historical dimension, ranging from re-weighing and adaptation to reconstruction, transposition, and evocation. It also proposes a graphical profiling tool designed to visualise and compare the sources, techniques, and intentions underlying such creations.

Overall, this is an ambitious and timely contribution to the field of olfactory heritage and historically informed scent-making. The authors bring together a rare combination of expertise in perfumery, heritage practice, and scholarly research, and they address a genuine need for greater clarity and transparency in how “historical” scents are produced and communicated. With some further clarification and refinement, the framework has potential to become a useful reference tool for researchers, perfumers, and cultural institutions alike.

One point that would benefit from being made more explicit is what exactly NOMEN is intended to classify. At times, the paper moves between ancient perfumes recreated as perfumes and then it mentioned scents created to evoke places, atmospheres, or smellscapes. While both clearly belong to contemporary olfactory heritage practice, they are not entirely equivalent, and readers may wonder whether they are meant to be treated in the same way within the framework. A brief clarification of this scope would make the application of NOMEN clearer and help avoid confusion when readers attempt to apply it to their own projects.

Within the five categories, there appears to be some ambiguity in how they are delineated, and certain methodological overlaps make them difficult to distinguish consistently in practice. Re-weighing is defined very clearly, but the remaining categories would benefit from sharper differentiation. According to the authors, *adaptation* involves recreating a historical perfume from an imprecise or incomplete recipe, requiring interpretation and creative decision-making to fill gaps in ingredients, proportions, or techniques. However, a similar situation often arises when scents are reproduced on the basis of chemical analysis – which is currently in the category *reconstruction*. Ancient organic residues rarely yield a complete molecular profile, and even when analytical data allow a complete recipe to be inferred, substantial uncertainties typically remain, for example regarding missing compounds, or exact ratios. In this sense, *reconstructions* based on chemical data frequently require interpretive choices that closely resemble the adaptive processes described under *adaptation*. The framework would therefore benefit from clarifying how adaptation differs from reconstruction when both approaches involve significant interpretation due to incomplete evidence.

The category of *reconstruction* would also benefit from further differentiation based on the temporal distance of the material. For example, working with an 18th-century perfume flask that still retains a faint smell allows for a direct sensory comparison between the object and the

reconstructed scent. In contrast, for ancient, much older materials, the original odour may be entirely lost, leaving only non-odour-active molecular traces. In such cases, the reconstructed scent is based on inferred recipes derived from characteristic biomarkers rather than on any surviving olfactory reference. These two situations represent qualitatively different levels of reconstruction, yet they are currently grouped under the same category. Related to this point, the category of reconstruction currently encompasses both cases where an odour is partially preserved and cases where it has been completely lost, which risks conflating *re-smelling* (comparison with a surviving scent) and *re-inferring* (reconstruction from molecular traces alone). Making this distinction explicit would clarify what kind of historical access is being claimed in each case.

The category of *evocation* also appears blurred in certain instances. For example, the work by Carole Calvez on the *Scent of the Afterlife* is described as *evocation* in the paper, yet it draws directly on chemical and archaeological data. This raises the question of whether evocation should be reserved for projects based primarily on imaginative or symbolic interpretation, and whether cases informed by analytical evidence, even when interpreted creatively, might require clearer differentiation. Overall, the boundaries between adaptation, reconstruction, and evocation would benefit from more explicit diagnostic criteria.

Finally, I occasionally found myself wondering how NOMEN is intended to be used in practice. Many projects I'm aware of combine several approaches at once, for example by drawing on both historical recipes and chemical analyses. It would therefore be helpful to clarify whether projects are expected to fall into a single category or whether overlaps are not only possible but anticipated. Even a short paragraph explaining how to deal with mixed cases would make the framework easier to apply. A simple decision tree or diagnostic checklist could enhance the usability of NOMEN and reduce inconsistent applications.

Minor comments:

To my knowledge, the project by Coughlin and Goldsmith mentioned in the section on reconstruction was not based on chemical analysis, but rather on ancient textual sources. While Robert Littman and Jay Silverstein did identify organic residues at the site of Tell el-Timai, the recreation of the so-called "Cleopatra's perfume" appears to have been based mainly on recipes and descriptions preserved in ancient texts. In this sense, the example may fit more closely within the category of adaptation as defined by the authors. I am aware that chemical analyses may have been conducted by Silverstein, but to my knowledge these results have not yet been formally published. Clarifying this point would help ensure that the example is placed in the most appropriate category.

The distinction between re-weighing, re-edition (reformulation), and updating is important but may not be immediately clear to readers outside perfumery. A short glossary or summary table could help clarify these relationships.

Is the work original in terms of material and argument?

Yes

Does it sufficiently engage with relevant methodologies and secondary literature on the topic?

Yes

Is the work clearly and cogently presented?
Partly

Is the argument persuasive and supported by evidence?
Partly

If any, are all the source data and materials underlying the results available?
No source data required

Does the research article contribute to the cultural, historical, social understanding of the field?
Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: I'm an archaeo-chemist working in the field of archaeological science. I specialize in the chemical analysis of ancient organic residues, particularly aromatic and spice plants.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 27 Apr 2026

Isabelle CHAZOT

We would like to express our sincere gratitude to Dr Huber for her careful, technically informed, and constructive review of our manuscript. We are very pleased that she recognized the potential of this classification. We greatly appreciate the clarity with which she identifies methodological ambiguities and the precision of her observations regarding analytical reconstruction, chemical inference, and classificatory consistency. Her comments have significantly helped us refine the NOMEN framework and clarify its practical applicability. We respond below to her main remarks.
1**. Scope of NOMEN: perfumes versus broader historical smell compositions** In the revised manuscript, we now clarify more explicitly that NOMEN is intended to classify contemporary olfactory compositions that explicitly claim a historical dimension, whether these concern the recreation of historically attested perfumes or compositions that evoke past environments, practices, or smellscapes. We acknowledge that these referents are not ontologically equivalent. Their inclusion within a single framework reflects a shared contemporary practice of mobilising historical claims through scent production. This clarification has been added to the section on scope of application. Their inclusion also reflects the need for each “reconstitution” to undergo a process that creates a “fragrance/scent” using today’s molecules or fragrant material as the odorous compositions rely on modern perfumery techniques

.2**. Adaptation and reconstruction: interpretative overlap** We are grateful for the reviewer's nuanced discussion of the overlap between adaptation and reconstruction, especially in cases where chemical analysis yields incomplete molecular profiles and therefore requires interpretative decision-making. We agree that reconstruction based on analytical data frequently involves choices comparable to those required in adaptation from incomplete recipes. In response, we have clarified that in NOMEN the distinction does not rest solely on the presence or absence of interpretation, since interpretation is inherent in all categories, but rather on the primary methodological claim guiding the composition. We thus stressed the fact that adaptation refers primarily to projects grounded in textual or recipe-based sources that require interpretative completion while reconstruction refers primarily to projects grounded in material or chemical evidence, even when such evidence is partial and demands inferential supplementation. We have added explicit wording to state that categories are assigned according to the dominant evidentiary framework rather than the exclusive use of a single type of source. This aims to preserve analytical clarity while acknowledging hybridity.

3. Differentiation within the category of reconstruction We thank the reviewer for highlighting the need to distinguish between cases in which residual odour remains perceptible and cases in which only non-odorant molecular traces survive. This distinction is indeed methodologically significant. In the revised manuscript, we have introduced a clarification within the reconstruction section distinguishing reconstructions based on residual olfactory continuity (where comparison with a surviving scent trace remains possible), and reconstructions based exclusively on inferred molecular profiles without surviving olfactory reference. We have emphasised that these represent different degrees of historical mediation and different types of epistemic access to the past, even though both fall within the broader category of reconstruction.

4. Evocation and analytically informed projects In the revised text, we clarify that this example illustrates the fluid boundaries between categories. In this case, while the composition was informed by scientific findings, it did not claim to reconstruct a historically attested recipe, but rather to translate analytical knowledge into a contemporary interpretative composition. We have rephrased the passage to avoid ambiguity regarding its classificatory status and to emphasise that such cases highlight the interpretative nature of the framework. **5. Hybrid projects and practical use of NOMEN** We have clarified that NOMEN does not require exclusive categorisation. Many projects may legitimately display characteristics of several categories. In such cases, the classification reflects the primary methodological orientation while allowing secondary influences to be represented in the visual profile. The radar chart system is particularly suited to rendering such hybridity visible. We have also added a short clarification explaining how mixed cases should be approached in practice

6. The example of Coughlin and Goldsmith Regarding the methodological basis of the so-called "Cleopatra's perfume", we acknowledge that the published documentation foregrounds textual and historical sources more prominently than chemical analysis, and that the analytical results have not been formally published. In light of this observation, we have revised the description to reflect more accurately the evidentiary basis of the project and to clarify the grounds on which it is situated within the reconstruction category. These revisions highlight the need to provide not only the public but also cultural institutions and researchers with precise information on how the odorant compositions were produced.

7. Distinction between re-weighing, re-edition, and updating These distinctions may not

be immediately clear to readers outside the field of perfumery. To improve clarity, we have refined the definitions of these categories and strengthened the explanation of their respective objectives. We have also ensured that the differences between fidelity-driven re-weighing and commercially motivated reformulation (re-edition/updating) are stated more explicitly. The case of “updating” refers to the process of following a historical recipe while taking into account modern reception and evolving public tastes.”

Competing Interests: No competing interests were disclosed.

Reviewer Report 08 January 2026

https://doi.org/10.21956/openreseurope.22846.r66104

© 2026 Tullett W. This is an open access peer review report distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

?

William Tullett
University of York, York, England, UK

This is an interesting and important intervention in the field of smell heritage that draws on an interdisciplinary range of expertise within and without academia. It is written by a group with extensive expertise in smell history, in the archiving and curation of perfume history, and in the history of flavour and fragrance science. The following are a series of provocations to this text (given that the reviews are open) that are partly aimed at potential revisions and partly offered for readers to engage with alongside the article itself because in some cases they constitute differences of opinion or interpretation. A lot of the below is concerned with the question of framing - of what this classification system is really trying to classify.

Before that though, let me start with a quick clarification. The reference to a 'Whiffstory Toolkit' was slightly odd. The Odeuropa project, of which (for purposes of transparency) I was a member, produced two articles in *The American Historical Review* with ‘Whiffstory’ in the title. The first, which is not cited, is titled “Whiffstory: Using Multidisciplinary Methods to Represent the Olfactory Past”. Despite not being cited, this is the piece that offers a classification of different ways of engaging with the past through smell. However, the cited piece is ‘Making Whiffstory’ which was specifically linked to the publication of a smell in the journal in the form of a scratch and sniff card. We also produced a separate ‘Olfactory Storytelling Toolkit’ (also not cited) as a guide to using smell in museums and heritage settings. This is all to say that there is no such thing as the ‘Whiffstory Toolkit’ and so this requires editing and disambiguation. As an addendum to this point, I thought that the description at the end of the paragraph in question - found squirrelled away in footnote 4 rather than open in the main text - to be rather ungenerous. We are told that a scholar 'attempted' to do something, but offered 'misinterpretations and confusions', without spelling out what those confusions were (in this case a very early career scholar). The result is that the researcher is criticised without offering substantive evidence or justification of that criticism. The footnote also adds nothing to the argument. I would suggest either citing the piece in question and engaging

with it directly in the main body of the text or leaving out the footnote entirely. A similar mode of casting doubt without enlightening the reader further is found in the discussion of the work of Goldsmith and Coughlin where we are told 'In these examples, many questions remain' but not what those questions are or why they are important (and the cited material here is an online magazine article, hardly the place for detailed scholarly discussions of method?).

With that out the way, let's return to the more substantive content and claims of the article and that provocations I'd like to make in response.

The first provocation concerns the framing of the article's subject matter. It is unclear whether the article is concerned with the Osmothèque's normal focus - perfume - or with smell in a heritage setting more generally. This lack of clarity surfaces at various points, starting with the abstract. The abstract begins "The past decade has seen a proliferation of olfactory compositions and devices claiming a degree of mimetic connection to a vanished scent or atmosphere...". There are a few problems with this statement. The first is that that smell has been used in museums since at least the mid-twentieth-century (various U.S examples, including the Smithsonian) and later alternative dates for the uptick in the use of smell could be provided (such as the 1980s with Jorvik Viking Centre and other museums which used ambient scent as part of their curatorial strategy, inspired by themed attractions and in turn inspiring many others to follow). Either way, claims about what has or has not occurred over the past decade in particular need backing up with evidence. Have the authors compiled and tabulated a database of such examples or attempted to track this ostensible growth in the use of smell? I think the claim that we have witnessed something of a smelly renaissance is right (that's certainly a vibe I can catch), but there's a difference between feeling something is so and evidencing it.

The second issue in the abstract, repeated in the main body of the text, is the argument that the deployment of scent in a museological, commercial, or educational context has had the aim of offering 'visitors a direct sensory connection to the past; in other words, to collapse temporal distance, even if only momentarily, by allowing them to physically experience the air of a bygone era'. It is worth dissecting this claim in detail. The first point to make is that the authors have ascribed this aim to the users of smell but offered no evidence for that ascription. In this respect they share ground with Mark Smith, who has assumed that the goal of sensory reconstruction in a museum context is purely to beguile the audience into believing they are experiencing a form of time travel (see various publications of his, including most recently his *Sensory History Manifesto* and his co-authored book with Rob Boddice *Emotion, Sense, Experience*). However, no evidence is offered for this assertion about the intentions of those deploying scent or any indication that this is the way in which such deployments are experienced by audiences. In fact, some of the work on smell in a public history context has emphasised that smell *distances* us from the past rather than connecting us with it in a museum context (see Dolly Jorgenson, Louise D'Arcens). I am happy to share with the authors the accepted version of a paper due to be published in *The Public Historian* in August 2026 that deals with some of these issues should they wish to think them through further.

More generally, there is a growing body of literature that deals with the question of reconstruction and the past. The much wider literature on historical dress, reconstruction of scientific experiments, or experimental archaeological reconstructions of food etc offers one literature. But there is also a small but evolving range of scholarship that explicitly discusses this in relation to the senses. Probably most obvious here is the literature on taste. One of the best recent examples

comes from the thoughtful article co-authored by a group led by Marieke M. A. Hendriksen titled 'Tasting the Past? Developing a Methodology for Researching Historical Tastes'. This scholarship raises interesting questions about the distinction between material fidelity and the reconstruction of mere perception that are also at issue here. These could do with more engagement in the article.

The third issue is one of terminology. The article claims that the various approaches to re-creating scents from the past are 'often lumped together under the broad and vague label of "reconstitution"'. Again, a claim is made that something 'often' occurs and then offers no evidence of said occurrences. Who is doing this lumping? The public? The media who report scientific findings? The scientific authors of papers? This is not clear. Perhaps this is because the assertion is false: to my knowledge I have not observed a tendency within the literature – or within a public facing museums and heritage context – to universally deploy the word 'reconstitution'. A variety of terms have been used – reconstruction, recreation, reinterpretation and so on. In fact, the authors themselves describe endeavours that 're-create', 'reconstruct', or use historical material to 'inspire'. Sure enough, in footnote 3 the article then goes on to admit that this is a term that the authors *themselves* have 'chosen to use in this work to refer to all olfactory compositions claiming a historical dimension, regardless of the method used to create them'. So, in fact the authors are the ones doing the lumping together and not the projects and practitioners they are surveying. The paragraph in which the 'lumping' accusation occurs does include an example of sorts, referring to the deployment of reconstructions of ancient Egyptian or seventeenth-century French perfumes by museums without 'providing any information on the sources consulted or the techniques employed'. This is an important point. However, it is not clear why this particular problem is relevant to the objective of the article. There is a conversation to be had – in fact, one that is already being had - about how one uses and displays smells in the context of museums, but that is not the ostensible objective of this article. Such a discussion requires thoughtful engagement with questions in the museum studies literature around curation, labelling, audience experience, diffusion methods, etc (because otherwise it sounds like the solution offered by the authors of this paper is a big block of text setting out the method, materials, and aims of a reconstitution, which I'm pretty sure would be ineffective for a lot of exhausted museum goers!). This means that the reference to museum practice feels like a straw person or a distraction from the real issue of classifying different methods of reconstructing smells.

That lumping together brings me to a fourth issue, which is the precise ontological status of 'scent' in this piece. In the introduction, for example, the stated aim is to develop a vocabulary for classifying attempts to bring 'lost scents back to life'. As is clear and appropriate, the expertise of the Osmothéque concerns perfumes (we might use the word 'scent' here as an alternative way of describing intentionally designed olfactory compositions) but it has not to my knowledge (and I am happy to be corrected here) been interested in the evocation of smellscapes or non-perfumery-related smells. Now it is clear that the modern development of smells for use in a *museum* setting (I am deliberately excluding living history and heritage sites here, which often unintentionally diffuse smells as result of the practices that occur within them) since the mid twentieth century has often had the effect of converting all attempts at evoking any smell whatsoever from the past (whether a perfume or an ambient smellscape) into *a scent* by virtue of the technologies and techniques of reconstruction, manufacture, and diffusion used in museums. The smell of hell (to take an example discussed in the article), that might have once been evoked by the stench of a leather-tanner's pit in a medieval mystery play or the sulphuric squibs used to create sound effects on the early modern stage or evoked in the minds of worshippers by a

preacher's words is instead converted into a bottled artifact that can be spritzed and sprayed (though not too liberally). This produces a difficult tension for this classificatory system to resolve. For whilst most if not all attempts to evoke the smells of the past use the technologies of modern perfumery, only some and not all the scents thus revivified were modern perfumes to begin with. I think there needs to be more recognition in the article that some of the examples are perfumes that recreate perfumes but others are perfumes that smells or smellscapes. This basic distinction seems to really be at the heart of the classification thus enumerated (and makes we wonder whether really we are dealing with two classifications here: one for perfumes and another for smellscapes or ambient scents or whatever term you would like to use). At the moment the classification blurs the two and I am not sure if that really helps.

I do like the idea of the graphical representations of different aspects of a particular reconstruction. However, I do feel for these to be comprehensible (and re-used in other articles for classifying other scents) more explanation of the 15 different criteria, how those criteria were chosen, how they are 'rated' (and who does the rating) etc. Could it be suggested, for example, that such graphical representations might be published with future scent reconstructions in other journals or part of the peer review process of a reconstructed scent (see the Odeuropa work in *American Historical Review* where a peer review of a smell was used, which was also used in the Coughlin et al's recent publication of an article accompanied by scratch and sniff card). If so – and I think this could be a nice way to add to and develop the idea of peer reviewing reconstructions – it would behove the authors to develop a more concrete outline of the 15 criteria and how they are assessed. If these are to be used in the context of public engagement and mediation, then the public(s) thus engaged need to be made aware of the criteria and what they mean. Which 'public(s)' are these criteria aimed at engaging?

A few other things I picked up on: I was confused by the statement in the abstract that the classification was based on 'objective criteria and was independently conceived, without any evaluative or promotional intent'. I would have thought this goes without saying and the statement about 'objective' criteria probably raises the issue of subjectivity that is best left in its box. There also seemed to be some confusion about what constitutes 'the past'. In discussing the painting 'Orange Blue' (1964-5) by Ellsworth Kelly the authors suggest that though 'the artwork is actually modern, it was treated as a source from the past'. This sentence appears to operate on the basis of a conception of 'the past' that I am unfamiliar with. My understanding is that 1964-5, rather like the 25th of December 2025, is very much in the past. At present their does, despite protestations to the contrary, appear to be a hierarchy at work – a hierarchy of mimesis. We start with the formulas, closest to the scents, and we end with works that might not even have any mimetic function at all and thus are judged to be outwith the boundaries of what is 'historical'. All classifications such as this are boundary drawing exercises and all boundary drawing exercises serve different interests. I think we should not shy away from admitting this. I think I have offered enough reflection here and so I will avoid commenting on the afterword which, whilst interesting, felt like a separate article answering a separate important question (about *why* the fascination with historical reconstruction of past smells has ostensibly grown in significance over the last decade) that needed space for its own engagement with scholarship, evidence, and footnotes. There is much more I would love to write and engage with here at more length but I am afraid that the deadline for the review was very tight and sent just before Christmas. I have therefore had limited time to write this review.

Is the work original in terms of material and argument?

Yes

Does it sufficiently engage with relevant methodologies and secondary literature on the topic?
Partly

Is the work clearly and cogently presented?
Partly

Is the argument persuasive and supported by evidence?
Partly

If any, are all the source data and materials underlying the results available?
No source data required

Does the research article contribute to the cultural, historical, social understanding of the field?
Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: I am a historian of smell and a public historian interested in the role of the senses in our contemporary engagement with the past.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 27 Apr 2026

Isabelle CHAZOT

We would like to thank Dr. Tullett for his evaluation, insightful comments, and suggestions aimed at improving the manuscript. We have taken most of his remarks into account and have revised the article accordingly. His feedback has helped us clarify several conceptual and methodological aspects of the NOMEN framework. We respond below to the main issues raised.
1. Clarification regarding the "Whiffstory Toolkit" We thank the reviewer for pointing out the inaccuracy in our reference to a "Whiffstory Toolkit." We have revised the manuscript to refer accurately to the relevant publications produced within the Odeuropa project, including Whiffstory: Using Multidisciplinary Methods to Represent the Olfactory Past and Making Whiffstory, and we have removed the incorrect reference. This gave us the opportunity to clarify the scope of application of the NOMEN framework. In particular, we emphasized the model's specificity in that it includes perfumers' expertise in the olfactory interpretation of sources and focuses on the creation of odorous compositions.
2. Framing of the field and claims about recent proliferation Our reference to "the past decade" and our characterisation of a recent proliferation of historically inspired scent

projects did not intend that the use of scent in museum did not exist before (we agree that the use of scent in museums and heritage contexts has a longer history, including significant developments in the mid- to late 20th century), but that it recently became more important. Indeed this assertion was not based on statistics, but on our collective observations and on bibliometry – this recent surge is also noted in the article mentioned above (Whiffstory... "In the last years, we have witnessed a growing trend toward employing scent in a heritage context." p. 862). Rather than situating the phenomenon exclusively within the last decade, we have decided to make clear that those initiatives were already existing in the past, but with less visibility. Our aim was not to deny earlier precedents, but to highlight the increasing density and methodological diversity of contemporary practices. We have moderated the formulation accordingly.

3. Attribution of intentions ("collapsing temporal distance") We acknowledge that a formulation suggesting that these projects aim to "collapse temporal distance." may risk attributing a singular intention to a heterogeneous range of initiatives. We have revised this passage to emphasise that historically inspired olfactory projects are presented with different goals, and that their relationship to temporal mediation is neither uniform nor unproblematic. Rather than asserting that they "collapse temporal distance", we now describe them as offering forms of sensory engagement with historical contexts, the effects of which depend on both curatorial framing and audience reception. We acknowledge that "smells/scents" can create a distance from the past rather than connecting us to it

4. Terminology and the question of "lumping together" We have clarified that NOMEN itself constitutes an analytical effort to distinguish between practices that are often referred to under umbrella terms, whether in institutional communication, media discourse, or professional usage. We had already specified that the term "reconstitution" was used to give a name to those many endeavours, whatever term was used originally. In fact, the mis-use of "reconstitution", "reconstruction" or "recreation" is less relevant for our perspective than the absence of description in the method employed.

5. Ontological status of "scent": perfume / smellscape In response to the observation regarding the ontological tension between historically attested perfumes and smellscapes or ambiant odours, we now state more explicitly that, although NOMEN emerged from expertise in perfumery, it applies to contemporary olfactory compositions that claim a historical dimension, whether these concern the recreation of a specific perfume or the evocation of a historical environment. We consider that these objects are not ontologically equivalent and that their inclusion within a shared classificatory framework reflects a common contemporary practice of mobilising the past through scent technologies. As Dr Tullett writes himself in his comment "all attempts to evoke the smells of the past use the technologies of modern perfumery". Moreover, the Osmothèque has begun to incorporate into its collections olfactory compositions with historical aims, such as those produced within the context of Odeuropa

6. Adaptation and reconstruction: methodological boundaries We had already stressed that boundaries between categories were not always clear and couldn't be perfectly impermeable. We agree that adaptation and reconstruction may overlap in practice, especially where chemical analysis and textual sources intersect. We have clarified that NOMEN assigns categories based on the primary methodological claim guiding the composition rather than on the exclusive use of a single type of source. We have also refined the discussion of "reconstruction" to distinguish between cases involving residual olfactory continuity and those based solely on inferred molecular evidence. Our aim is not

to deny hybridity, but to provide a framework capable of describing dominant methodological orientations while acknowledging overlaps.
7. Graphic representation and the fifteen criteria We appreciate the reviewer's interest in the radar charts and his suggestion that greater transparency regarding the criteria and their assessment would strengthen their effectiveness as a mediation tool. We have clarified that the scoring system is heuristic rather than metric, and that the values attributed reflect structured qualitative assessments based on available documentation. We emphasise that the purpose of the diagrams is comparative and descriptive, not evaluative. While we have not expanded the framework into a fully standardised protocol, we have added clarification regarding the interpretative dimension involved in the attribution of values.
8. Hierarchy and the notion of "the past" It was not our intention to establish a hierarchy of mimetic legitimacy, but rather to organise the categories along a spectrum of source directness and creative latitude. We have clarified that this continuum is analytical rather than normative. Regarding the example of Ellsworth Kelly's Orange Blue, we have revised the phrasing to avoid suggesting that the 1960s fall outside "the past." Our intention was to refer to the use of a temporally prior artwork as a historical source within the framework of the project, not to imply a restrictive definition of historicity.

Competing Interests: No competing interests were disclosed.