

The Nose Knows...Until it Doesn't

Research on the Archival Preservation of Scent

Jennifer Justice

Department of STEM Education & Professional Studies

Old Dominion University

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Jessica Ritchie

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Introduction

Take a moment to reflect on your favorite scent. Is it a pile of burning leaves in the autumn? Tobacco smoke rising from a grandfather's pipe? Chalk dust that reminds you of your favorite primary school classroom? Scent and memory are a natural pairing. A smell can conjure a sense of time and place. Scents have the ability to evoke strong emotions. Scents can tell a story. Yet future generations may not recognize certain scents due to their decline in use in modern society. There are smells that are in danger of becoming extinct; unrecognizable and lost to history. Imagine the scents that have already become forgotten over time that were once a part of daily life or indicative of a certain place or time period. The scents one would experience walking the streets of an industrial city in the nineteenth century would overpower modern noses. The smells of an ancient Roman home or temple could be foreign to our senses.

Scent is more than just a whiff of perfume. An olfactory experience can directly contribute to cultural and collective memory. A scent can provide a bevy of information that should be preserved. This phenomenon of researching, recreating, harnessing and preserving the fleeting yet powerful nature of scents is now on the radar of modern scientists and archivists. This research will explore scents that are slowly disappearing from our modern experience. It will also look at case studies and research that has been conducted to discover scents that are no longer known to modern civilization.

From a preservation standpoint, it will discuss the efforts that are underway to preserve and interpret scent. Scientists have recreated the scent of extinct flowers and plants in labs. Curators are looking for ways to incorporate scent in museum exhibitions.

Graphic designers are creating digital smell maps of cities around the world to capture the unique scents of the location. Archivists are beginning to explore the possibility of scent archives. When we think of preserving our past in archives and other cultural heritage institutions, it is often through physical records and materials. Looking beyond these traditional methods in an effort to incorporate the intangible ways we experience our world and seeking to preserve them is an exciting prospect.

Scent as Historical Narrative

Our modern interpretation of the past is often experienced through visuals. We base our understanding of the past through the words we read in books and records or the images we see on screens. Yet we are missing part of the story when we do not stop to consider the importance of scent in telling the story of past people, places and events. For example, we can read numerous biographies or view portraits of Napoleon Bonaparte to get a better idea of his mannerisms, dress, accomplishments, etc. Yet did you know he was well known for his favorite scent? Napoleon was so attached to his eau de cologne with notes of rosemary, bergamot and bitter orange that he wore copious amounts of it daily and carried a bottle of it in his boot (Haigney, 2020).

According to art historian and scent researcher Caro Verbeek, the battle of Waterloo would have exuded a pungent air of horsehair, sweat, wet grass (it had rained the night before), gunpowder, leather and the signature scent of Napoleon himself. These scents were meaningful enough to the soldiers present to describe them in their letters. The aroma of the battle was a part of the experience that was recorded for posterity. Verbeek, centuries later, was able to use this information to recreate this combination of smells for an interactive museum exhibition, where visitors could catch a whiff of Waterloo on scented strips of paper stationed next to a painting of the battle (Haigney, 2020).

Just like in the soldier's letters, we can uncover clues to the cultural importance of scent hidden in physical objects from the past. Some of these scents we can feel a connection to in a modern context, such as the image of a woman holding a flower to her nose on a Greek amphora (See Fig. 1). Some we may not recognize, like the fishy and smoky scent emanating from a 19th century whale oil lamp (See Fig. 2). Yet the scent, whether directly represented or inferred by these objects is part of the story of the people who created and utilized these items. The simple pleasure of smelling a flower or the practical act of illuminating your home are moments that we can collectively relate to that transcend time and place. Scent is part of the human experience. Researching past sensory experiences is only one task that modern cultural heritage professionals have begun to undertake. They have also started to delve into the idea of scent as an essential component of memory and why it is worthy of preservation efforts. The

fleeting nature of scent is spurring an urgency to preserve it. Advancing technology and evolving cultural practices are quickly creating endangered and extinct scents. Yet technology can also work in our favor. Capturing, preserving and interpreting scent is now more possible than ever before.



Figure 1. (Credit: The British Museum)



Figure 2. (Credit: The Chrysler Museum of Art)

Scent as Cultural Memory

What makes a scent important? What deems one scent worthy of preservation while another may pass by unnoticed? Scent is ephemeral. It is a momentary sensation. Yet it can leave a lasting impact. The value that we place on an experience as short-lived as scent lies in the collective meaning placed upon it by a culture or group

of people. Researcher Cecilia Bembibre explains, “When we think of heritage we generally think of buildings, works of art, even intangible expressions such as traditions or folklore, but we rarely think about the sensory dimension of that heritage. The connections between sensory perceptions and identity are very strong. There are places where you can experience the culture of a country through its sensory input” (Carmona, 2022, para. 4). The layer of awareness that scent adds to cultural remembrance has been officially recognized by countries like France and Japan. In January 2021, France became the first country to formally recognize sounds and smells as ‘sensory heritage’ and advocated for them to be preserved as essential elements of cultural identity. Two decades earlier, Japan created a list of sites where they felt the smells present were most representative of the culture of the location (Carmona, 2022).

Deciding on what makes a scent culturally significant can be tricky. Bembibre feels that community dialogue and consensus are needed, but this field of study is still very new. And not everyone may agree as smell can be a deeply personal experience influenced by many factors in a complex and continuously evolving smellscape (Cottier, 2022). The National Trust’s former head of conservators, Katy Lithgow, says, “It has to do with how these smells are associated with people, really. So the first thing is to consult with people about what sort of smells they think are valuable. These values can be traditional ones, like historic or aesthetic value. Or they could be economic, scientific, utilitarian, cultural, communal, emotional values” (Trevino, 2020, para. 21). Context also plays a role in how we prescribe meaning to scent. Bembibre also explains that the

manner in which we interpret smells is heavily reliant on the cultural background and the moment we live in (Trevino, 2020). As our world evolves, so do the ways we engage with it on a sensory level.

Describing an aroma can also pose a challenge. Adjectives and descriptive words and phrases are bound to change over time. If we are able to preserve a scent and assign certain characteristics and descriptors to it now, will they still translate the same way in the future? The key is in, "...building communicable data. This starts a conversation with philosophers, scientists, anthropologists, technologists, and the public itself about what we need to describe a smell. Those conversations will lead to a better way to monitor a baseline smell, capture and describe a smell, and perhaps some day reproduce it in a lab" (Blakemore, 2017, para. 10). We must also be aware that it is human nature to experience our senses in unique ways. Researcher Anna Chen reminds us, "Because odor recognition depends heavily on memory, several people may perceive the same odorant differently, depending on their individual histories and past relationships to that odor. This difference may become more marked between different cultures, where each has been exposed to different types of environmental odorants such as foods, perfumes, and plants, and is further compounded by genetic variability" (Chen, 2016, p. 108).

One unique method being explored to record the scent of a location is a smell map. The Sensory Maps project spearheaded by U.K. artist and researcher Kate McLean seeks to compile sensory data obtained by participants referred to as "smell

walkers”. She then turns that information into a graphic that represents a visual map of which scents are being experienced collectively, thus creating a signature scent for that location. Participants are provided with a smell visualization kit and log odors as they explore an area on foot. The volunteers catalog and note elements for each scent, such as intensity, pleasantness, and familiarity. They then mark their findings on white canvases, which are turned into graphic representations by McLean (Traverso, 2017). These digital graphics can be used to preserve sensory output that can help inform future research concerning a certain place and time in history. (See Fig.3 / Fig.4).

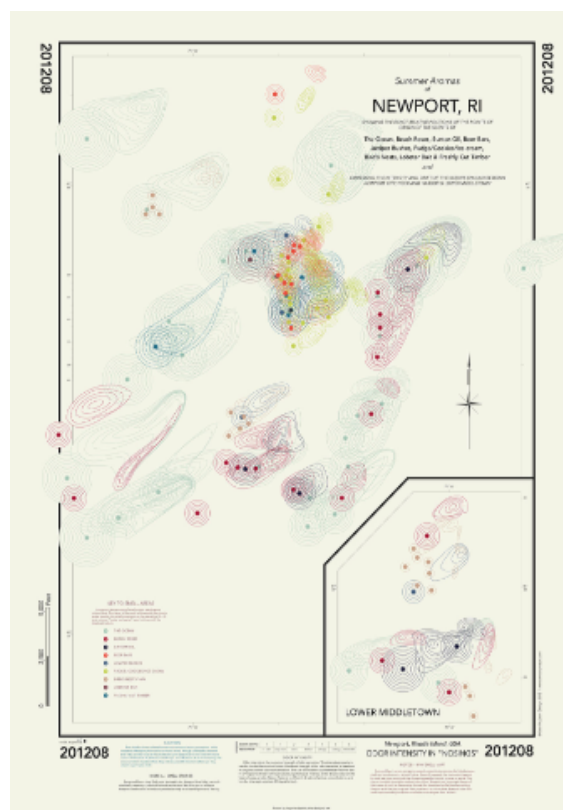


Figure 3 (Credit: Kate McLean)



Figure 4 (Credit: Kate McLean)

Scent as a Record

We have established the cultural significance of scent and the benefits of preserving it for future generations. But how do we actually do this? Can scent be brought back to life? Can we capture it in a physical form? What preservation methods can be applied to scent? In what ways can we interpret it and share it on a broader scale?

Let us first look at the example of a scent that has been brought back from extinction with the assistance of modern technology. At Harvard University lies the last surviving (dried and preserved) specimen of *Hibiscadelphus wilderianus*, a flowering tree that once flourished in the fertile soil of Maui's lava fields (See Fig. 5). The species died out in 1912 due to colonial cattle ranching on the island. In 2018, a team of genetic engineers working with the firm Ginkgo Bioworks set out to bring the flower's fragrance back to life. To recreate the extinct plant's scent, DNA samples were extracted from the specimen and the scientists began to sequence its genetic code. They were able to identify the DNA sequences that would have yielded scent-producing enzymes known as sesquiterpene synthases. The team then printed molecules with these specific DNA strands and allowed the molecules to ferment with yeast, thus recreating a synthetic fragrance resembling that of the original plant (Davis-Marks, 2021).



Figure 5. (Credit: Grace Chuang/Ginkgo Bioworks)

The process of DNA extraction has exciting implications for the possibility of recreating and preserving the scent of materials that were once living. But what about the scents of inorganic objects? Can those also be preserved? Enter Cecilia Bembibre, a researcher with University College London's Institute for Sustainable Heritage. Bembibre and her colleagues have made it their mission to seek out scents that are bound to our intangible cultural heritage and to find a way to make their preservation possible. All scents are composed of a mix of volatile chemical compounds that float through the air until they reach our olfactory glands. Bembibre's methods for capturing smells combine scientific methods in the lab, group sampling and surveys in the field and assigning descriptors that will be familiar to those in library and archival professions. In the lab, Bembibre employs solid-phase microextraction. An example of

how this process works is demonstrated by an experiment Bembibre conducted at St. Paul's Cathedral in London. Bembibre exposed a sensor to the air surrounding a centuries old collection of deteriorating leather-bound books. The sensor captured the volatile chemical compounds. Bembibre was then able to utilize a gas chromatography-mass spectrometry machine to separate the compounds, which could then be recorded and categorized. What we are left with is "an aromatic recipe of sorts" (Cottier, 2022, "What's in a Scent" section). This process of extracting and naming the individual elements that make up a scent could be applied to many different inorganic objects. In turn, records with these scent "recipes" could be preserved and used to recreate the scents in the future.

Access and Interpretation of Scent

The ability to archive scent can create greater access to our cultural heritage for a broader audience with varied needs. It also falls in line with emerging trends in archival science and the "expanding awareness of different learning styles and cognition patterns across archival user bases" (Jenkins, 2018, p. 77). There has been an uptick in interest in incorporating scent in museum exhibitions, like we saw with the scented strips of paper representing the aromas present at Waterloo. Scent can also be a way for visitors that are blind or have impaired vision to engage with art. Marie Clapot,

associate museum educator at the Metropolitan Museum of Art, says, “A lot has been done with touch, with tactile approaches, movement and sound and it kind of dawned on me, we haven’t been doing much with smell...It’s one way you make an art object more accessible” (Haigney, 2020).

Archivists are beginning to explore the concept of scent archives. Yet this undertaking is not without its challenges. Researcher Anna Chen states, “...identification and preservation are as critical to olfactory archives as they are to any archives. However, the characterization of aroma compounds is still not a straightforward process, and no single method for their isolation and identification exists” (Chen, 2016, p. 108). Also the concept of bias and privilege in collections must be considered. Researcher Alex Rhys-Taylor of Goldsmiths University suggests that the eventual archival process must avoid preserving only the scents of privileged spaces. He says “With any creation of an archive there is a big question of what is being selected. It would concern me if we were only curating or collecting the aromas of a specific social sector” (Trevino, 2020, para. 26).

The idea of scent as a record of our shared human experience and the prospect of creating archival collections dedicated to preserving our olfactory heritage is a new and exciting venture. As cultural institutions and preservation methods continue to evolve, we can expand the ways in which we view and interact with our past. It is amazing to imagine that the aromas that represent our cultures and those that waft

through our streets and homes in the present day could be experienced and appreciated far into the future.

*Reader, have you enjoyed the rare reward
Of breathing deeply, in an ecstasy,
Incense that fills a church, or greedily,
Inhaled the lingering musk a sachet stored?*

*Consummate, magic joy when drunkenly,
We, to the present, find the past restored!*

-Charles Baudelaire, "Le Fantôme"

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