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Open Source Perfume

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OPEN SOURCE PERFUME

Amanda Levendowski†

Perfume is a powerful art and technology, but its secrets are closely held by a privileged few—by some counts, there are more astronauts than there are perfumers. As critics have noted increasingly since 2020, those select few perfumers often share similar backgrounds. The Western perfume industry prizes perfumers with elite pedigrees, which often precludes marginalized perfumers. It also perpetuates exclusionary practices, from erasing “noses” who develop perfumes to exoticizing non-Western cultures, that push some marginalized perfumers into teaching themselves perfumery. But teaching oneself through recreating and remixing existing fragrances presents a different challenge. As interviews with American, British, and French perfumemakers reveal, IP plays a complicated role in perfumery. Some aspects of scents, like colors and odors, remain unsettled but likely fall into the negative space left by trademark and copyright law. Others, like molecules and formulas, are protected by IP that rarely deters competitors but effectively prevents aspiring perfumemakers from creating and sampling scents. The free culture movement addressed similar problems in other industries by championing creativity with limited or no IP, but the perfume industry has remained largely untouched.

Drawing on work by perfumer and educator Saskia Wilson-Brown, this Article suggests that perfumery is overdue for a transformation. One is emerging: open source perfume. Open source perfumes allow anybody to replicate or reimagine fragrances, which empowers aspiring perfumemakers and the public to practice

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perfumery. It’s simple. Crafting an open perfume requires releasing public, operationalizable documentation about the scent, including its ingredients and where to purchase them. Existing open source licenses feature terms that enable perfumemakers to reject or limit IP rights in aspects of their perfumes. For those seeking ways to share scents and signal commitment to democratizing perfumery, this Article draws on personal experience to pioneer the use of open source hardware certification—which extends the open source ethos into tangible products, broadly called “hardware”—which provides additional infrastructure for forfeiting rights in branding, works, components, and know-how to share scents that are made to be sampled. Together, these interventions can fuel fragrances that are free: free to make, free to sample, and free from gatekeeping. Open perfume ought to be the next free culture frontier, and this Article helps chart a course toward its expansion.

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INTRODUCTION

For a stretch in the mid-aughts, it seemed like every Brooklyn Millennial smelled the same.\(^1\) Attorneys and artists left behind lingering trails of sandalwood and smoky leather in cocktail bars and subway cars.\(^2\) The smell became the signature scent of trendy boutiques that sold Sally Rooney’s Normal People alongside impressive arrays of clogs.\(^3\) An ode to the familiar fragrance went viral.\(^4\) When a journalist joked that a Quinnipiac poll found one in five respondents shared that same signature scent, it was imminently believable.\(^5\) Le Labo Santal 33 quickly claimed the title of “first iconic perfume of the aughts.”\(^6\)

Santal 33’s omnipresence demonstrates the powers of perfume. It shares stories.\(^7\) It evokes emotions.\(^8\) And it’s profoundly proprietary.

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6 Allie Volpe, Le Labo Santal 33: The Scent that Went from Ruggedly Cool to Utterly Basic, FASHIONISTA (Jan. 10, 2019), https://fashionista.com/2019/01/le-labo-santal-33-perfume-trend-over [https://perma.cc/E6FE-3X79]; Singer, supra note 3. The scent is so popular that perfume enthusiasts have identified similar scents that cost significantly less money, like Maison Louis Marie’s Bois de Balincourt. It nails the sandalwood notes but substitutes Santal 33’s musky leatheriness for sweet spice, like nutmeg and cinnamon. Ellie Conley, Everyone Says This Perfume is a Dupe for Le Labo Santal 33, and Luckily, It’s a Lot More Affordable, IN THE KNOW (Jan. 20, 2023, 5:44 PM), https://www.intheknow.com/post/le-labo-santal-33-dupe [https://perma.cc/GSH8-UYYX]; Bois de Balincourt, MAISON LOUIS MARIE, https://maisonlouismarie.com/products/no-04-bois-de-balincourt-perfume-oil [https://perma.cc/75UN-B3QA]. Bois de Balincourt is, however, not a dupe, as discussed infra Section II.A.3.b.


While scholars debate the wisdom of the term intellectual property (IP), the term describes exclusive rights that protect brands, works, inventions, and know-how from unauthorized copying. Chris Sprigman and Kal Raustiala have speculated that perfume partially occupies IP’s so-called “negative space,” a term they coined to capture that “substantial area of creativity into which copyright and patent do not penetrate and for which trademark provides only very limited propertization.” But, as both acknowledge, perfumery does not neatly occupy IP’s negative space—its legal status is far stranger. Colors. Odors. Molecules. Formulas. Not only do several of these features trigger IP protections, like patent and trade secrecy, aspiring perfume makers (and even established ones) may assume that they all do. They’re not right, but they’re not quite wrong either. Unlike other creative industries such as publishing, music, and film, the applicability of fundamental IP rights, like trademarks to fragrance colors or copyrights to perfume odors, remain untested and unsettled. And those limited established rights are unsatisfying to both rightsholders and aspiring perfumers, albeit for different reasons. The IP rights in perfume that do exist are not powerful enough to deter commercial competitors, yet they prevent aspiring perfumers from practicing their art by limiting access to materials, formulas, and methods like sampling.

In perfumery, “sampling” refers to taking or remaking another perfumer’s scent as the basis for a new one, which may or may not be released commercially. As Sarah McCartney, founder of the British independent perfume house 4160 Tuesdays, explained, sampling is “the classical way of doing things, like the classical way to learn art . . . . You know, if you want to write songs that you play everybody else’s songs first.” Aspiring perfumers may seek to recreate something familiar, like Santal 33, to understand how its notes of Australian sandalwood, cedarwood, spice, leather, and musk combine to create a compelling scent. But as perfumer and educator Saskia Wilson-Brown explains, “[w]hat you might refer to as ‘sampling culture’ in music, for example, doesn’t exist in the world of scent. I know a lot of people who got in

Berntsen, Odour-induced Mental Time Travel into the Past and Future: Do Odour Cues Retain a Unique Link to our Distant Past?, 19 MEMORY 930, 930 (2011).


11 Id.

12 Interview with Sarah McCartney (July 21, 2023) [hereinafter McCartney interview].

13 Santal 33, supra note 2.
trouble this way. I think that sampling is important and necessary because it allows people to build on each other’s creativity. It allows us to learn from each other.”

When music sampling bumped into IP rights, artists faced lawsuits. Yet artists in other industries, from Andy Warhol to Alexander McQueen, sampled successfully to push their practices forward. In perfumery, IP often reinforces the art as an exclusive industry.

It’s also an exclusionary one. Since 2020, there has been a surge of discussion about the profound lack of diversity in perfumery. The mainstream industry is rife elitism, erasure, and exclusionary nomenclature, which deters many aspiring perfumers—particularly marginalized ones—from pursuing the practice. Mainstream Western perfume industry prioritizes elite formal training in Paris or a small town called Grasse, France, which is often financially and logistically out of reach for aspiring perfumers.

Attribution and advertising practices decenter perfumers’ contributions to favor the (white) celebrities who become the “faces” of perfumes, erasing their creative and authorial

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And the industry continues to describe a family of fragrances as Oriental, despite mounting protests from Asian and Asian-American perfumers. Stacked together, these hurdles explain why a staggering number of mainstream Western perfume makers remain white Frenchman with formal training.

This Article joins existing efforts to democratize an exclusive, exclusionary industry. To resolve murky IP rights without a rollback for rightsholders, perfumers can opt-in to certifying scents through the Open Source Hardware Association (OSHWA), an organization that “aims to foster technological knowledge and encourage research that is accessible, collaborative and respects user freedom” by certifying tangible objects, like perfumes, as “open.”

Not only does certification eliminate IP ambiguities, the process also addresses accessibility ones. The OSHWA certification database doubles as a centralized search engine for open source perfume formulas, a much-needed resource that does not exist.

Drawing on a series of interviews with British, French, and American perfumemakers who operate outside the mainstream industry, as well as my own practice pioneering the use of OSHWA to certify open source perfumes, this Article deconstructs the role that IP and social barriers play in perfumery and devises a path to democratizing perfumery as an art and technology.

Perfumery is poised to be the next cultural institution overdue for a transformation, and open source perfume provides a powerful one. The emerging open source perfume movement builds on parallel progress in


22 About OSHWA, OPEN SOURCE HARDWARE ASS’N (2023), https://www.oshwa.org/about/ [https://perma.cc/L7Y8-86A7].

23 Interview with Joey Rosin (July 31, 2023) [hereinafter Rosin interview].

24 Initial interviews were conducted in July 2023 with support from the Georgetown Center for Transnational Legal Studies. Additional interviews are anticipated during the Edison Fellowship.

software and knowledge but, unlike those efforts, it is led predominantly by self-taught women and women of color. Not surprisingly, the industry is skeptical. Pioneering perfumer and educator Saskia Wilson-Brown observes, “[o]pen source programming around scent is . . . tricky because it’s a very new concept for the perfume industry.” She described industry reception to her open source perfume advocacy by reflecting that “[t]he few people within the industry that I’ve spoken to about it, are like, ‘Okay good luck with that.” While perfumers have published their fragrance formulas since at least 800 AD, and many others are available online, public formulas are spread across thousands of books, websites, and social media feeds, many of which are not truly open or, in other instances, housed on obscure fora. Not only does OSHWA certification clarify IP issues, but also provides a concentrated place for aspiring perfumers to start their art.

This Article proceeds in four parts, each one using a different fragrance as a frame for demonstrating different doctrines, discriminatory barriers, and directions for democratizing perfumery. Part I details fragrance fundamentals using Le Labo Santal 33 and La Boticá Nolita 96, beginning with industry nomenclature, scent descriptions, and a taxonomy of the industry’s players. Part II documents how IP and industry practices create an exclusive and exclusionary industry. Section A examines IP protections, or lack thereof, in the “juice”—an insider term for liquid fragrance—infomed by the iconic Chanel Nº 5. Trademark and copyright are untested protectors, and both pose problems. Colors can be guarded as trademarks. But granting a monopoly over common shades of perfume, like Santal 33’s near-clear hue, would negatively impact competitors, which undercuts trademark eligibility. Some countries have concluded that perfumes are protectable as works of authorship by copyright, but their fleeting nature likely makes them insufficiently fixed to qualify for legal protection in the United States. Patent and trade secrets protect perfumes, but in a porous way. Processes for producing synthetic molecules can be shielded by patent law, but that path often goes unwalked by smaller perfumers because

26 See infra Conclusion.
27 Id.
registration requires divulging processes’ details publicly, which subjects them to appropriation by competitors after a relatively short term. While those limitations highlight the appeal of trade secrets, formulas are increasingly being reverse engineered using technology, which is widely available to competitors but beyond the reach of aspiring perfumers. However, that technology is unavailable to aspiring perfumemakers, who instead have limited access to formulas to sample. Practically speaking, the law of IP and perfumery is untested, unsettled, and (to some) unsatisfying at preventing sampling or duplication. A different barrier to an inclusive industry is the industry itself. Section B documents how the industry’s exclusionary practices limit diversity in the industry, drawing on the story of Guerlain Shalimar. Centuries after the rise of commercial perfumery, the industry still prizes pedigrees, both in terms of heritage and training, that favor perfumers who are white, male, and formally trained in France. When aspiring perfumemakers overcome those barriers, their contributions are often erased by industrywide attribution and advertising practices. And despite its widespread rejection as an offensive term, many perfumers cling to the fragrance family “Oriental” to capture stereotypically mystical and mysterious scents. The result is a mainstream industry whose Western perfumers do not reflect the industry’s vast global reach—and a niche industry that increasingly does, thanks to self-taught perfumemakers.

With creative effort, however, perfumery can be democratized. Part III discusses how open source perfume can address IP and industry barriers to teaching aspiring perfumemakers. Existing open source licenses, like the Creative Commons Attribution-ShareAlike license, are already used by perfumers to release detailed information about their fragrances, like the series of P-22 hosted by Open Source Smell Culture. But existing databases can be diffuse, which is why in 2023 I began submitting my series of Internet-inspired perfumes, like World Wide Web, to the Open Source Hardware Association (OSHWA) for certification as open source hardware. OSHWA certification signals perfumers’ commitment to creating fragrances that can be shared and sampled while curating a centralized database of open source perfumes that are easily findable by emerging and established perfumemakers.

33 *See 18 U.S.C. § 1839.*
34 *See infra Section II.B.1.*
35 *See infra Section II.B.3.*
36 *Seipp, supra note 28.*
37 TK.
Open Source Perfume

Fragrance might feel frivolous, but it is not. Globally, perfume is a $58 billion industry and only growing. Beyond its reach, however, dismantling the legal and social barriers to practicing perfumery is urgent. “My stories come from my unique perspective,” explained Chris Collins, the first Black perfumer to have a fragrance line in Bergdorf Goodman. “The more diversity we have, the more stories we get to hear.” Right now, the public experiences a small handful of those stories, many of which hit the same notes. Open source perfumes provide a powerful path to sharing new stories. By deconstructing the IP and industry barriers to practicing perfumery, this Article devises a new way to fuel fragrances that are free—free to make, free to sample, and free from gatekeeping. The next free culture frontier should be open source perfume, and this Article charts a course toward the practice’s expansion.

I. Perfume Primer

Le Labo Santal 33 was created by perfumer Frank Voelkl, who is an archetypal “nose,” the industry term for a perfumer: he is a white man who grew up and trained in France. While he lived in France, Voelkl was inspired by the sophisticated fragrances his mother wore, and he pursued perfumery. For formal training, he attended the prestigious ISIPCA in Paris, a school specializing in perfume, cosmetics, and flavoring. Voelkl soon landed a role as a professional perfumer at the world’s largest privately owned composition house, where he develops fragrances for luxury brands and perfumeries like Le Labo.

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39 Mazzone, supra note 17.
41 Id. Fun fact: Voelkl’s mother wore chypre perfumes, discussed infra Section I.A. My open perfume, IYKYK—because if you do, you do—is the first certified open source chypre fragrance. TK.
42 Principal Perfumer Frank Voelkl, supra note 40.
If Voelkl reflects the predictable path to perfumery, Afro-Dominican perfumer Dawn Marie West represents the unconventional one taken by many marginalized perfumers. Creative director West founded her perfumery, La Boticá, in 2018.\(^4^4\) Formerly a fine art photographer and museum supervisor with no ties to France, let alone fragrance, West explored entering the world of traditional perfumery without success.\(^4^5\) “When I looked into places I could study,” West explained, “I realized how representation for Black perfumers is virtually nonexistent.”\(^4^6\) Instead, West taught herself perfumery.\(^4^7\) La Boticá is infused with West’s story, from its scents (which draw from her Afro-Dominican roots) to its sourcing (which relies on sustainable ingredients from indigenous communities within and beyond the Dominican Republic).\(^4^8\) Her fragrances are also a success: Nolita 96, inspired by her experiences working in downtown Manhattan art galleries, sells out routinely and her candles are recommended routinely.\(^4^9\)

The two noses behind Santal 33 and Nolita 96 appear to have little in common—not their experiences, not their educations, and not their employment.\(^5^0\) And yet, the two both created perfumes with significant

\(^4^4\) Denton-Hurst, supra note 18. “Boticá” is Spanish for “drugstore.”
\(^4^6\) Denton-Hurst, supra note 18.
\(^4^7\) Id.
\(^4^8\) Id. La Boticá also donates a percentage of its proceeds to The Dream Project, a nonprofit organization serving nearly 30 communities in the Dominican Republic to educate thousands of children and young adults. The Brand, LA BOTICA, https://www.laboticanyc.com/thebrand [https://perma.cc/SZH9-Q8RQ] (2023).
\(^5^0\) Ironically, both fragrances did begin life as candles. Larkworthy, supra note 5; Denton-Hurst, supra note 18. West opted to begin with candles because the materials were cheaper. Id.
similarities. Part A provides a vocabulary for describing individual ingredients, known as “notes,” and fragrance families, which illuminate the olfactory overlap between Santal 33 and Nolita 96. However, Voelkl and West still occupy very different parts of the perfume industry. Part B describes the different players that create, market, and distribute perfumes. Taken together, this Section uses two perfumes to provide a clear, comprehensive primer for describing and developing Western perfumery.

**A. Describing Scents**

While each word has its own subtle distinctions, this Article uses the words perfume, scent, and fragrance interchangeably to describe a cohesive odor composed from a series of notes. A “note” is any material that composes the odor of a perfume. Those materials may be natural or synthetic; some synthetics may be substitutes for naturals or wholly invented. A heady sandalwood note features in Santal 33 and Nolita 96. In both perfumes, the scent of sandalwood is prominent—and political. When Europeans colonized India, they extensively harvested sandalwood for its fragrance. As a result, sandalwood trees were overexploited to the point of endangerment. While other countries grow sandalwood, its precarity as a natural material means that many perfumers opt for synthetic ones that imitate the tree’s warm, spicy smell.

Perfumers, as well as crowd-sourced community websites, often share information about perfumes’ notes, which carry different classifications based on molecular weight and tenacity; top notes are the lightest and fade the fastest, base notes are the heaviest and last the

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51 In my experience, it was incredibly challenging and time consuming to identify the niche perfume foil, by nose and notes, to Santal 33.


55 Id.

56 Id.; R.C. McLellarn, K. Dixon & D.M. Watson, Prolific or Precarious: A Review of the Status of Australian Sandalwood (Santalum Spicatum [R.Br.] A.DC., Santalaceae), 43 THE RANGELAND J. 211 (2021). Some perfumers, like Mandy Aftel, work only with natural scents. See MANDY AFTEL, ESSENCE AND ALCHEMY: A NATURAL HISTORY OF PERFUME (2001). However, it is unclear whether the note in either Santal 33 or Nolita 96 is natural or synthetic, as neither perfumery discloses details about their compositions.
longest, and heart notes fall in between. Santal 33 and Nolita 96 share a number of notes:

**Top Notes:** Iris  
**Heart Notes:** Santal, Violet  
**Base Notes:** Cardamom, Musk

However, notes are not rules, and some transcend these categories. Despite being a heart note, the “santal,” or sandalwood, in both perfumes lasts with the tenacity of a base note—in my experience, it lingers for hours, not minutes. Despite these similarities, the two fragrances diverge, largely due to Santal 33’s addition of an alluring “smoking wood alloy” comprised of Australian sandalwood, cedarwood, and “spicy, leathery, musky notes.” When multiple notes work together in a perfume, like Santal 33’s smoking wood alloy, they are called an “accord.” The result is that the two scents are similar in the same way as two sweaters, one freshly laundered (Nolita 96) and one worn to a campfire (Santal 33). The similar materials make for divergent olfactory experiences.

Similar arrangements of multiple notes or accords create perfumes that share similar profiles, known as “fragrance families.” The first visualization of fragrance families, known as a “fragrance wheel,” was introduced by Austrian perfumer Paul Jellinek in the late 1940s. His fragrance wheel divided scents by vegetable or animal qualities and separated those into quadrants for bitter, vegetable, sweet, and animal.

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57 Basic Perfume Primer, INST. FOR ART & OLFACTION, https://artandolfaction.com/wp-content/uploads/2020/12/IAO_1_PRIMER_V4.pdf [https://perma.cc/2G29-D4KS]. There are exceptions to these categorizations, of course, such as aldehydes, which add sparkle to top notes yet have the tenacity of base notes—they are base notes that “work[] on the top.” Id. Aldehydes are a dominant note in Chanel No. 5. See infra Section I.A.


60 Santal 33, supra note 59. Le Labo uses the word “alloy,” not accord, which may feel more evocative of the American West and its mining opportunities. Id.


Unlike subsequent fragrance wheels, Jellinek further defined categorizations by highlighting physiological responses to perfumes, like whether they are stimulating, narcotic, and (anti-)erogenous. Decades later, perfume expert Michael Edwards published a streamlined fragrance wheel in his annual perfume manual. Edwards’ current fragrance wheel also has four core categories—amber, woody, fresh, and floral—further broken down along fourteen descriptive gradients like citrus, aromatic, and multiple variations of woods. Natural perfumer Mandy Aftel designed the most detailed of the leading perfume wheels, featuring twelve core categories and dozens of subcategories, which are supplemented by lists of representative notes. And the Institute for Art and Olfaction adapted Edwards’ and Aftel’s approaches to provide a comprehensive, open source list of fragrance families that also includes definitions for specific style, like “chypre,” which is characterized by its citrusy bergamot top notes and earthy oakmoss base notes. The latter list is used throughout this Article.

Fragrance families are flexible, but they can also present fairly consistently across different fragrance wheels. Jellinek’s fragrance wheel categorizes both Santal 33 and Nolita 96 as stimulating woody perfumes. On Edwards’ wheel, the two are dry woods fragrances.
Aftel’s wheel classifies both as soft woody scents. And based on the Institute for Art and Olfaction fragrance “wheel,” both are woody perfumes. No matter which of these experts or perfumers you ask, and despite differences in formulas, both perfumes’ persistent sandalwood note plays a prominent role in identifying its core fragrance family: woody.

B. Demystifying the Industry

Understanding where and how noses do their work clarifies categories of fragrance developers. West and Voelkl are noses working in different spheres of the Western perfume industry: niche perfumery and mainstream perfumery. La Boticá is an example of the former. “Niche” does not necessarily mean that noses are in-house; rather, it signifies that the perfumery relies on entrepreneurs and investors who operate independently of the legacy institutions that comprise mainstream perfumery. While definitions vary among perfumers, niche perfumeries may be further defined in at least two ways: artisan and independent. Artisan perfumeries rely on in-house noses to develop their fragrances; independent perfumeries may rely on outsiders.

Beyond niche lies mainstream perfume. Mainstream fragrances are often produced by brands that specialize in scent and other personal care items, like Le Labo, or luxury brands that sell a more diversified set of goods, like Chanel. While France continues to occupy a prominent place in perfumery, the newest dominant players in the mainstream industry are global composition houses like Givaudan (Swiss), International Fragrance and Flavors (American), Symrise (German), Takasago (Japanese), and Firmenich (Swiss), where Voelkl works, which specialize in contracting with niche and mainstream perfumeries to develop fragrances for them. It works like this: perfumeries describe their

71 Aftel, supra note 67.
72 Basic Perfume Primer, supra note 68.
73 This Article uses the Institute for Art and Olfaction wheel when describing perfumes.
74 Denton-Hurst, supra note 18.
75 Garfinkle, supra note 17. Before Le Labo was acquired, it was also niche.
77 CHANDLER BIRR, THE PERFECT SCENT: A YEAR INSIDE THE PERFUME INDUSTRY IN PARIS AND NEW YORK XVII (2009). See also Samuel Fillon & Elizabeth Kupevaser-Gould, Uncovering the perfume industry, SOMMELIER DU PARFUM BLOG (Jan. 20, 2021),
proposed scent in a creative brief, which may range from a single sentence to several pages of directives to a series of paintings, songs, and films that capture the intended “vibe” of the perfume. Composition houses respond by pitching different compositions of scents, the most compelling of which “win[s] the brief.” Voelkl, for example, was selected by Le Labo to create Santal 33 from his position at Firmenich. Perhaps unsurprisingly, composition houses often produce perfumes for luxury brands and celebrity fragrances, which rarely employ in-house noses.

Additional important industry players are licensees, which contract with different brands to produce and/or market perfumes using other peoples’ formulas. While licensees’ offerings are familiar, their names are rarely part of perfumes’ packaging or marketing. Le Labo was acquired by licensee Estée Lauder (New York) in 2014 and Guerlain, the perfumery used to frame this Article’s discussion of the industry’s exclusionary practices, is owned by LVMH (France). Other leading


78 BURR, supra note 77, at 5–6.
79 Id.


licensees include Coty (New York), L’Oréal (France), and Shiseido (Japan). Mainstream perfumeries are often invisibly owned by these conglomerates.

II. PRECLUDING ASPIRING PERFUMERS FROM PRACTICING PERFUMERY

In the 1960s, Chanel ran a prolific campaign for its iconic Chanel Nº 5 perfume proclaiming that “[e]very woman alive loves Chanel Nº 5.” But perhaps not every woman. The lore of Chanel Nº 5 is tainted by Coco Chanel’s entanglements with the Nazi regime. Chanel romanced a rising Nazi officer. She invoked Nazi laws in a failed attempt to wrestle back control of her perfume house from the Wertheimer brothers because they were Jewish. Chanel’s perception as an “indisputable collaborationist” with the Nazis led her to be officially questioned by a French judge. And since her death, Chanel-the-brand has offered only milquetoast reflections on the antisemitic history of its namesake, stating:


85 See, e.g., CHANEL NO. 5, Registration No. 0701978 (the only live mark); EVERY WOMAN ALIVE LOVES CHANEL NO. 5, Registration No. 1058841 (prior Registration No. 0807105).


87 Dana Thomas, The Power Behind the Cologne, N.Y. TIMES MAG. (Feb. 24, 2022), https://www.nytimes.com/2002/02/24/magazine/the-power-behind-the-cologne.html [https://perma.cc/NU26-8NB6]. The full story is even wilder. The Wertheimers, who maintain control of Chanel’s perfumery operations today, outsmarted Chanel by transferring their stake in Les Parfums Chanel to a Frenchman named Félix Amiot, who returned the company after the war. Id. Unfortunately, Amiot was also a Nazi collaborator: his company, in which the Wertheimers acquired nearly fifty percent prior to the deal, sold arms to the Nazis. Id.

Gabrielle Chanel was a daring pioneer, and the House of Chanel upholds and extends her extraordinary legacy. Her influence on many designers has been significant, and she continues to inspire new generations. However, her actions during World War II are the subject of discussion in many publications and biographies. The actions that some have reported in no way represent the values of Chanel today. Since that time in history, the House of Chanel has moved forward well beyond the past of its founder.89

While Chanel’s complicated legacy can overshadow her work, Chanel Nº 5 will always reflect the innovative impressions of someone other than Chanel herself; her perfumery’s first nose, Ernst Beaux.

After serving in the French military, he joined A. Rallet and Company, an elite Russian perfumery housed outside Grasse, France.90 Rarely discussed, Beaux created the famous fragrance through sampling. In the fifth flask he presented to Chanel, Beaux offered her a riff on his own Rallet No. 1, a scent crafted for the Russian tsarina characterized by an overdose of icy Champagne-bubble organic compounds—called aldehydes—overlaid with florals, the effect itself inspired by the groundbreaking aldehydes in Quelques Fleurs.91 If Beaux had been barred from seeking inspiration in existing fragrances, it is no exaggeration to say that the history of perfumery would have been forever changed.92

Chanel Nº 5 may be part of the house’s decision to “move forward,” but the intertwined legacies of its namesake and maker remain a pungent reminder that perfume is, and always has been, political. This Part deconstructs legal, social, and political such forces that keep perfumery proprietary. Section I.A discusses the porous relationship between IP and perfumery. When it comes to trademark colors and copyrightable odors, the law is untested and unsettled—but it remains likely that these aspects of scent fall beyond IP’s grasp. But other components, like molecules and formulas, are protectable by patents and trade secrecy. While these forms of IP do not deter competitors from copying, they both have a chilling

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91 Id. at 70–72.
92 His perfume singlehandedly created the fragrance family of aldehydic florals Id. at 67.
effect on aspiring perfumers’ sharing and sampling of scents. Those effects are compounded by industry practices. Section I.B documents how elitism, erasure, and exclusionary practices limit who can thrive as perfumers, with a preference for white men trained in France. Together, IP and industry practices create barriers for aspiring perfumers to pursue the art of perfumery.

A. Examining IP In the “Juice”

In the summer of 1920, Russian-French nose Ernest Beaux was contracted to create a new perfume, for women, the likes of which the world had never seen. After months of experimentation, Beaux presented several vials to his client for inspection. Her face was implacable as she smelled each one, but she chose the fifth flask, which featured a fragrance characterized by a bouquet of florals doused in an overdose of aldehydes. “I always launch my collection on the fifth day of the fifth month,” proclaimed Coco Chanel, “so the number 5 seems to bring me luck—therefore, I will name it ‘N° 5.’” At the moment of its selection, Chanel N° 5 had already become the stuff of lore.

Over a century later, Chanel N° 5 remains popular, potent, and proprietary. Nearly every aspect of Chanel N° 5, inside and outside, down to its iconic crystal bottle, is potentially protectable by IP. Broadly, IP describes owners’ exclusive rights to protect brands, works, inventions, and know-how from unauthorized copying, such as sampling. As a concept, however, “IP” is relatively new. This Article adopts the term without endorsing it.
1870s during an existential debate over the patent system. Anti-patenters believed that modern people were predisposed to invent, making expensive and oppressive patent monopolies unnecessary. Patent proponents countered the claims. British inventor Sir David Brewster spun up a growing coalition of patent defenders who called for “radical change.” Not abolition, but reform. His movement analogized patents to the more comfortable concept of copyrights, which had existed in Britain since the Statute of Anne of 1710, and which were enshrined in the United States Constitution. As Sir Brewster explained, “[v]iewing all intellectual rights as equal,” meaning, in his view, complete and everlasting, “and regarding them as sacred and unalienable as any other species of property, we maintain that they should be put on the same footing.” To complete the concept, Brewster coined the term “intellectual property” to unite copyrights and patents under a single banner. It worked—patents persisted.

After a century of dormancy, the term “IP” reemerged in the late 1960s. So did debates over its scope which continue today. The term has expanded beyond patents and copyrights to encompass adjacent fields like trademarks, trade dress, trade secrets, and even right of publicity, four of which have the potential to directly affect aspiring perfumemakers’ abilities to sample scents: trademark, copyright, patent, and trade secrets. Drawing on work by Charles Cronin and Claire

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102 Id. at 271. Similar arguments underpin the success of the free culture movement, discussed infra Part III.
103 JOHNS, supra note 101, at 276.
104 Id. at 275–76; U.S. CONST. ART. 1, § 8 cl. 8 (“The Congress shall have power . . . [t]o promote the [p]rogress of [s]cience and useful [a]rts, by securing for limited [t]imes to [a]uthors and [i]nventors the exclusive [r]ight to their respective [w]ritings and [d]iscoveries.”) Fun fact: somewhat counterintuitively, “science” was aligned with copyrighted works, and “useful arts” were associated with patents. Golan v. Holder, 565 U.S. 302, 324 (2012).
105 JOHNS, supra note 101, at 277. He also held some racist views, including suggesting that the abolition of patents would present “a tendency to become Chinese” by becoming complacent and stagnated. Id. at 278.
106 Id. at 277.
108 See infra Section III.
109 The lack of definitional clarity is one critique levied against the term “IP.” INTELLECTUAL PROPERTY: THE TERM, ELECTRONIC FRONTIER FOUNDATION (2023), https://www.eff.org/issues/intellectual-property/the-term [https://perma.cc/3RR4-N6YC]. However, many scholars’ primary objections to the term are the linking of IP protection to tangible
Guillemin, which canvas several key IP issues in perfumery, this Article illustrates how IP in the “juice,” or the liquid fragrance itself, remains largely untested, unsettled, and—in the eyes of some mainstream perfumers—unsatisfying.\textsuperscript{110}

This Section uses Chanel N° 5 to illustrate the unusual relationship between IP and perfumery. Trademark law guards words, phrases, symbols, designs, and other methods of identifying the source of goods or services.\textsuperscript{111} Colors are capable of operating as trademarks, as demonstrated in Part A. Chanel N° 5’s golden glow is recognizable, but a key trademark doctrine precludes protection for elements caused by ingredients, the desire to appeal to customers or practices that limit competition, which may preclude Chanel N° 5’s hue from trademark protection. However, the theory has never been tested. Even if perfumes are not protectable as trademarks, scents are often composed of materials developed through novel processes. Part B documents another unsettled form of protection for perfume odor: copyright. Copyright covers original works of authorship that are “fixed in a tangible medium of expression,” such as paintings, photographs, poems, plays—and, in some jurisdictions, perfumes.\textsuperscript{112} While fragrances are likely to be original works of authorship, as several European courts have held, their fleeting nature means they are unlikely to qualify for copyright protection in the United States.

But IP protects other aspects of perfumes. Part C discusses how patents shield inventions, such as new and useful processes for isolating or engineering molecules.\textsuperscript{113} Musky civetone, along with powdery florals and icy aldehydes, combine to create the iconic odor of Chanel N° 5.\textsuperscript{114}

\textsuperscript{112} 17 U.S.C. § 106(1)–(2) (defining exclusive rights in copyrightable works); \textit{infra} Part B.
\textsuperscript{113} 35 U.S.C. § 101.
2024]  

OPEN SOURCE PERFUME

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There is a hint of funk in Chanel Nº 5 that comes from civetone and synthetic musk, and at least one method of creating that latter “captive” molecule is patented. And as Part II(A)(3)(b) deconstructs, perfume formulas can be concealed through trade secrecy.\(^\text{115}\) What was once a go-to protection for the perfume industry has waned with the advent of new technologies, however. With $48,000 worth of used equipment and some specialized skills, secret formulas can be reverse-engineered, replicated, and even sold commercially without infringing on perfumers’ IP rights—but only by competitors. As a side effect of the extreme industry’s reliance on trade secrecy, aspiring perfumemakers are left with limited access to formulas to sample and learn from replicating. By exploring each potentially protectable component of perfume through its relationship to Chanel Nº 5, this Section illuminates the complexities of porous IP protections and their effects on aspiring perfumemakers.

It’s important to recognize, however, that the porous IP protections in the juice have not prevented other forms of IP from providing recourse for commercial copying: trade dress and trademark law. The duo protects external aspects of perfumes—such as branding, packaging, and slogans—from infringement globally, even when those rights may not extend to the liquid inside.\(^\text{116}\) Bottles and fonts can be just as recognizable as the juice itself, and they are often customers’ first engagement with fragrance.\(^\text{117}\) Chanel routinely uses trade dress to protect its Chanel Nº 5 fragrance from counterfeiting.\(^\text{118}\) These alternate modes of IP protection do not govern the “juice” or generally affect aspiring perfumers—and which is the central focus of this Section.

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\(^{115}\) See infra Section II.A.3.b.


\(^{117}\) Rosin interview, supra note 23.

1. Colors as Trademarks

Chanel filed its first American trademark application for the CHANEL Nº 5 mark with the U.S. Patent and Trademark Office on October 30, 1959. But even prior to registration, Chanel accrued rights in the perfume’s name. Many trademark rights exist as soon as sellers use their trademarks in commerce, which Chanel began doing in the 1920s. However, federal registration still confers certain benefits, such as constructive notice of the registrant’s ownership and prima facie notice that the mark is valid. Unlike other forms of IP, such as copyright and patent, registered and enforced trademark rights can extend indefinitely. But registrations require renewal through evidence that the mark remains in use. That proof is provided by submitting “specimens,” or visual submissions that show the registered mark as actually used in commerce, to the U.S. Patent and Trademark Office every ten years.

In 2020, Chanel submitted its renewal specimen depicting the CHANEL Nº 5 mark for its parfum. While the word mark was the only subject of trademark renewal, a different feature of the fragrance cannot be ignored: the perfume’s gold color. The pale champagne shade, clearly visible through every crystal flask, gives off a subtle glow that, as Deborah Gerhardt and Jon McClanahan Lee have documented, signals luxury. Some perfumers, including Chanel, consider color when

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119 This mark consists of CHANEL NO 5, Registration No. 701,978. The registration is in Class 3, which covers perfumes, for “perfumes” and other toiletries. Id. For a deeper dive into how to search and read trademark registrations, see Amanda Levendowski, Trademarks as Surveillance Transparency, 36 BERKELEY TECH. L.J. 439 (2021); Amanda Levendowski, Dystopian Trademark Revelations, 55 CONN. L. REV. (forthcoming 2023).

120 15 U.S.C. § 1125 (providing that unregistered marks can be protected from infringement, dilution, and tarnishment); id. § 1125(d) (providing that unregistered marks can be protected from cybersquatting).


123 Id. § 1058(b)(1)(A).

124 TMEP § 904.07(a) (July 2022); 15 U.S.C. § 1059; TMEP § 1606.04.

125 Combined Declaration of Use and/or Excusable Nonuse/Application for Renewal of Registration of a Mark under Sections 8 & 9, USTPO TSDR CASE VIEWER (Apr. 9, 2020), https://tsdr.uspto.gov/documentviewer?caseld=s72084287&docId=S8920200410152857&linkId=3#docIndex=2&page=1 [https://perma.cc/3LMK-GBBZ]. Some may be more familiar with a darker amber shade of Chanel Nº 5—that is for the Nº 5 eau de parfum, which is (counterintuitively) slightly less potent than the parfum formula. Nº 5 Eau de Parfum Spray, CHANEL, https://www.chanel.com/us/fragrance/p/125530/n5-eau-de-parfum-spray [https://perma.cc/EH2Q-PCDS].

formulating fragrance. As American indie perfumer Michael Nordstrand disclosed, “there is a lot of thought for somebody like me, who comes from a design background and art background, I think a lot about color and what it means.”

Trademarks, not unlike Nº 5 itself, have a long legacy. Early marks date back to Stone Age cave paintings; the first trademark law was enacted in 1266. For centuries, however, color alone simply could not be registered as a trademark in the United States. As the Supreme Court explained in a 1906 case involving wire rope streaked with red, where color is made the essential feature of a trademark, it must be so defined or connected with some symbol or design that other manufacturers can know what they can safely do. “Whether mere color can constitute a valid trademark may admit of doubt. Doubtless it may, if it be impressed in a particular design, as a circle, square, triangle, a cross, or a star. But the authorities do not go farther than this.” The Supreme Court was quite clear: color applied to entire goods was not protectable.

That changed when Congress enacted the Trademark Act of 1946, better known as the Lanham Act. In doing so, Congress expanded trademark registration to include slogans, sounds, and, for the first time, possibly colors. A subsequent duo of Supreme Court cases about

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127 Interview with Sarah McCartney, I smelled a vintage bottle of Chanel Nº 5 from 1947—the color was nearly fluorescent orange. McCartney interview, supra note 12.


129 See, e.g., Paul DuGuid, California Marking & Collective Amnesia, 47 U. CAL. DAVIS L. REV. 581 (2013) (discussing California’s first state-based trademark registration system, which did not include colors as qualifying trademarks); Patent Act of July 8, 1870, ch. 230, 16 Stat. 198 (not identifying colors as qualifying trademarks); A. Leschen & Sons Rope Co. v. Broderick & Bascom Rope Co., 201 U.S. 166, 171 (1906); early American trademark laws were invalidated as unconstitutional because the legislation was grounded in the authority of the Progress Clause, which only animates copyright and patent law. In re Trade-Mark Cases, 100 U.S. 82, 93–99 (1879); subsequent trademark legislation invoked the authority of the Commerce Clause and international treaties—it survived. Graeme B. Dinwoodie, The Common Law and Trade Marks in an Age of Statutes, in THE COMMON LAW OF INTELLECTUAL PROPERTY: ESSAYS IN HONOUR OF PROFESSOR DAVID VAVER, 331, 338–39 (Catherine W. Ng, Lionel Bently & Guisepina D’Agostino, eds., Hart Pub. 2010); Mark P. McKenna, Trademark Law’s Faux Federalism, in INTELLECTUAL PROPERTY AND THE COMMON LAW, 288, 289–92 (Shyamkrishna Balganesh, ed., Cambridge U. Press. 2013).


132 In re Owens-Corning Fiberglas Corp., 774 F.2d 1116, 1119-20 (Fed. Cir. 1985).
insulation foam and dry-cleaning press pads determined whether iconic shades are protectable as trademarks.133

In 1980, Owens-Corning Fiberglas Corporation took a gamble. The company applied to register the color pink as applied to fiberglass residential insulation, the foam-looking material used to pack wall interiors, which it had begun using in the 1950s. The company sought to make its insulation stick in consumers’ minds by spending $42,000,000 on advertising during primetime television.134 Sticking with precedent, the Examiner denied the registration and the Trademark Trial and Appeal Board, which reviews Examiners’ determinations, affirmed it.135

On appeal to the Federal Circuit, however, the court proclaimed that “[c]olor marks, as other indicia [of source], [are] no longer barred from registration” under the Lanham Act.136 That was not to say that all color marks were registrable. To evaluate color marks, Judge Pauline Newman used two trademark touchstones—functionality and distinctiveness—to determine that Owens-Corning’s pink for insulation was a protectable color mark. Citing a series of post-Lanham decisions, Judge Newman explained that “[i]n determining registrability of color marks, courts have considered factors such as the nature of the goods, how the color is used, the number of colors or color combinations available, the number of competitors, and customary marketing practices.”137 She also drew a hard line, concluding that “when the color applied to goods serves a primarily utilitarian purpose[,] it is not subject to protection as a trademark.”138 Her conclusion was consistent with a prior Supreme Court decision that held that a product feature was utilitarian, or “functional,” if “it is essential to the use or purpose of the article or if it affects the cost or quality of the article.”139 Examiners and judges were directed to evaluate three factors: “(1) whether a particular design yields a utilitarian advantage, (2) whether alternative designs are available in order to avoid hindering competition,
and (3) whether the design achieves economies in manufacture or use.” Applying these factors, the Federal Circuit held that “the color ‘pink’ has no utilitarian purpose, does not deprive competitors of any reasonable right or competitive need, and is not barred from registration on the basis of functionality.”

But there remained a lingering issue: did consumers actually associate pink insulation with Owens-Corning? The color pink obviously existed before and beyond the company’s insulation, but, under the Lanham Act, Owens-Corning could accrue secondary meaning in the color by demonstrating that pink had become “distinctive” of their goods through their longtime use, advertising expenditures, or survey evidence. According to Judge Newman, the company demonstrated distinctiveness through a combination of all three, citing Owens-Corning’s decades of use; their television, radio, and print advertising; its point-of-sale marketing materials; and a consumer survey showing that forty-one percent of polled consumers linked pink with Owens-Corning insulation. Convinced that “Owens-Corning pink” was not functional and was distinctive, the Federal Circuit declared that Owens-Corning was the first American company “entitled to register its mark” in a color applied to the entirety of the goods.

While the Federal Circuit’s decision seemed definitive, it did not settle the dispute over whether the Lanham Act permitted the protection of color marks. Post-Owens-Corning, several circuits declined to extend trademark registration to colors, and the Supreme Court was asked to resolve the growing circuit split. At the center of the controversy was a dry-cleaning company called Qualitex. In the 1950s, roughly the same time that Owens-Corning adopted pink for its insulation, Qualitex began using an iridescent green-gold color on their dry-cleaning press pads. In 1991, Qualitex successfully registered “a particular shade of green-

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141 In re Owens-Corning Fiberglas Corp., 774 F.2d at 1122.


143 In re Owens-Corning Fiberglas Corp., 774 F.2d at 1125–27.

144 Id. at 1128.


gold” as a mark for, in part, “press pads and covers for press pads for commercial and industrial presses.”

When a rival company began selling its own green-gold press pads, Qualitex sued them for trademark infringement. In the Supreme Court decision’s opening paragraphs, Justice Stephen Breyer was unequivocal: “there is no rule absolutely barring the use of color alone [as a trademark].” The statement was consistent with U.S. Patent and Trademark Office practices, which followed the Federal Circuit’s lead in Owens-Corning by approving registrations for color alone when it has “become distinctive of the applicant’s goods in commerce,” and where “there is [no] competitive need for colors to remain available in the industry,” meaning that the color is not “functional.”

Accordingly, the Supreme Court adopted and applied the doctrines of functionality and distinctiveness as barometers for determining whether colors could be registered as trademarks. Justice Breyer acknowledged that “[color] can act as a symbol that distinguishes a firm’s goods and identifies their source, without serving any other significant function.” While Qualitex’s press pads did effectively hide stains, any color could do that job—the green-gold shade primarily “act[ed] as a symbol.” Further, Justice Breyer confirmed that Qualitex’s customers did, identify the green-gold press pads as the company’s, demonstrating distinctiveness. The Court confirmed that “color alone, at least sometimes, can meet the basic legal requirements for use as a trademark.” Qualitex’s success in the Supreme Court cemented the functionality/distinctiveness two-step test for color marks and paved the way for registering colors as trademarks consistently.

Post-Qualitex, several luxury companies successfully sought registrations for color marks, from LVMH’s Tiffany blue boxes to Louboutin’s red-soled shoes. Could Chanel N° 5 gold be next? The

147 The mark consists of a particular shade of green-gold, Registration No. 1,633,711.
149 Id. at 166 (quoting U.S. Dep’t of Commerce, Patent and Trademark Off., TRADEMARK MANUAL OF EXAMINING PROCEDURE § 1202.04(e) (2d ed. 1993); see In re Owens Corning Fiberglas Corp., 774 F.2d 1116 (CA Fed. 1985).
150 Id. at 166.
151 Id.
152 Id.
153 Id.
154 Id.
155 The mark consists of a shade of blue often referred to as robin’s-egg blue which is used on boxes, Registration No. 2359351; [t]he mark consists of a red lacquered outsole on footwear that contrasts with the color of the adjoining (“upper”) portion of the shoe, Registration No. 3361597. For a deeper dive into the lively litigation that permitted protection of Louboutin’s red soles—
perfume’s color has been linked with the perfume for more than a century: an advertisement from the perfume’s launch in 1921 prominently features the fragrance’s gold shade. Ninety-nine years later, Chanel’s 2020 short film featuring “face” Marion Cotillard lingered on the fragrance for the final three seconds of the advertisement, highlighting the glowing gold liquid in the flask. While the cost of the ad is not known publicly, Chanel spent $33,000,000 on a single Chanel Nº 5 advertisement in 2004—nearly as much as Owens-Corning over multiple years—and presumably the Cotillard ad also cost in the multiple millions. Given Chanel Nº 5’s longtime status as the leading fragrance in the world, a survey could certainly reveal that a substantial portion of consumers associate Pantone 127 C, a “medium light shade of yellow,” with Chanel Nº 5.

The shade’s function still matters immensely, and it is likely dispositive. Some perfumeries choose combinations of active ingredients that simultaneously produce the perfect scent and color, like niche perfumer D.S. & Durga’s Pistachio perfume, which is naturally a pale green without color-enhancing additives. Crude citrus oil is dark yellow; red mandarin is red; oakmoss is bottle green. Colors created by carefully chosen ingredients that simultaneously play roles in the fragrance are, as the Supreme Court explained in a case about traffic signs, “essential to the use or purpose of the article.” Because those ingredients reflect so-called utilitarian functionality, such shades are excluded from trademark protection.


157 CHANEL, CHANEL Nº5, the Film with Marion Cotillard, YOUTUBE (Oct. 29, 2020), https://www.youtube.com/watch?v=qeMqcApmS7g [https://perma.cc/9NZL-PHKH].


159 E-mail from Ashley Williams to Amanda Levendowski, Associate Professor of L., Geo. Univ. L. Ctr.(Mar. 20, 2023) (on file with author) (“[W]e did not add any color to our Pistachio.”).

160 Rosin interview, supra note 23.

But Chanel Nº 5’s color is not utilitarian—at least, not exclusively. The shade of Chanel Nº 5 has changed over time, from a near fluorescent orange in the late 1940s to the present pale gold shade associated with the perfume. Today, Chanel identifies Yellow 5, Yellow 6, Red 33, and Red 4 among the perfume’s ingredients. Fragrance colors may also be enhanced with additives, whether to appeal to customers or amplify the impression of the fragrance. However, those shades pose a different functionality problem: aesthetic functionality, which kicks in where there is “no indication that the . . . color . . . ha[s] any bearing on the use or purpose of the product or its cost or quality,” yet the hue has other competitive advantages. Colorful perfumes can make a lasting impact. As American independent perfumer Joey Rosin observed, “[s]ometimes materials are added to color [perfumes and] you’d have that goal to have things that are violently blue, aquamarine blue. I don’t know what that perfume is called. I don’t even know how it smells, but I just know that it’s so blue.” Similarly, Chanel Nº 5 is a distinctive gold, which—like the perfume and brand itself—consumers associate with luxury. Other perfumes, like Viktor & Rolf’s popular Flowerbomb, use additives to achieve a rosy hue that teases the floral rose note driving the fragrance. Both types of additives are included for their appeal and amplifying effects, or, in the language of trademark law, their aesthetics.

There is also a sustainability limitation to protecting scents’ shades as trademarks. In a 1906 lawsuit over dual-colored match tips, the Sixth Circuit raised the existential problem posed by color marks: there are only so many colors. “The primary colors, even adding black and white, are but few,” wrote Judge John Richards, “[i]f two of these colors can be appropriated for one brand of tipped matches, it will not take long to

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162 I had an opportunity to smell a bottle from 1947 during my interview with Sarah McCartney, which clarified why the perfume became a classic. McCartney interview, supra note 12.
163 Nº 5 Eau de Parfum Spray, supra note 125. The exact formula is likely a trade secret, discussed infra Section II.A.3.b.
165 Rosin interview, supra note 23.
166 Deborah R. Gerhardt & Jon McClanahan Lee, Owning Colors, 40 CARDOZO L. REV. 2483, 2500 (2019). Rosin reported “accidentally” making perfumes the same shade of Champagne, noting that it is “a very easy color to make.” Rosin interview, supra note 23. The idea of the color being proprietary “never even occurred” to him. Id.
appropriate the rest.” In an industry where many perfumes fall into a limited range of clear, almond, gold, and amber shades, so-called “color depletion” is a concern for perfumeries. In an empirical work investigating the parallel issue of word mark depletion, Barton Beebe and Jeanne Fromer concluded that “both depletion and congestion are becoming increasingly serious problems for the trademark system.”

There are roughly 171,146 in-use English words, 47,156 obsolete ones, and untold numbers of fanciful marks that are not yet words at all. Compared to colors, word depletion is a non-issue: there are only 2,390 Pantone colors, many of which are not desirable because they are adjacent to existing perfumes’ colors, appear unattractive, create unnecessary expenses or are otherwise unsustainable as scents’ shades.

However, the problem of color depletion does not necessarily sway courts. Qualitex’s competitor invoked color depletion theory, explaining that “if one of many competitors can appropriate a particular color for use as a trademark, and each competitor then tries to do the same, the supply of colors will soon be depleted.” Justice Breyer was unpersuaded, largely because the argument “relies on an occasional problem to justify a blanket prohibition. When a color serves as a mark, normally alternative colors will likely be available for similar use by others.”

While that may be true for teal insulation and orange press pads, it’s less applicable to perfumes, which tend to occupy a relatively narrow range of clear, almond, golden, and amber colors, most of which happen to fall within a

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174 Id.
few shades of Chanel Nº 5 gold. To confront that issue, the Supreme Court turned back to the doctrine functionality. “If a ‘color depletion’ . . . problem does arise,” Justice Breyer wrote, “the trademark doctrine of ‘functionality’ normally would seem available to prevent the anticompetitive consequences . . . minimizing that argument’s practical force.”

Allowing Chanel to monopolize Chanel Nº 5 gold would affect competitors. Multiple fragrances by niche perfumer Frédéric Malle, for example, are closely adjacent to Chanel Nº 5’s gold, all of which would require expensive, time-consuming, and potentially scent-altering reformulation to avoid allegations of trademark infringement. Those are the select wares of a lone perfumery—extending trademark rights to such a common color of perfume would certainly “put competitors at a significant non-reputation-related disadvantage.”

When fragrances’ colors are attributable to note-contributing ingredients, those colors cannot be protected due to utilitarian functionality. And when their colors are selected to provide other competitive advantages, such as appealing to customers, those colors are precluded by aesthetic functionality. For the latter reason, it is unlikely that Chanel Nº 5’s of gold operates as a mark. But ambiguity around the scope of color rights for perfumes presents a problem for aspiring perfumemakers. Even if noses are not thinking of their notes in terms of “color marks” and “infringement,” they consider color when formulating their own fragrances, whether to be independently attention-getting or avoid the unwanted attention from others. Perfumeries’ rights in color marks for fragrances are unlikely, but that has yet to be clearly

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176 514 U.S. at 169.


established. A lack of clarity deterred neither Owens-Corning nor Qualitex from seeking and enforcing trademark protection in their respective colors, and aspiring perfumemakers might be right to be wary. As McCartney summarized, “I don’t understand the fun in [protecting colors] in the sense that it forbids the other creators and artists to use it and create, like very beautiful things with it... I think it’s a limitation you put on others that yeah, that’s a bit selfish... I don’t really like the concept.” Ultimately, as Rosin quipped, the smell of the scent will provide the “most color.”

2. Odors as Copyrightable

As Ernst Beaux reflected, “it is the aldehyde note that, since the creation of Chanel Nº 5, has more than anything else influenced new perfume compositions.” His fragrance is famed for its overwhelmingly icy top note, which comes from those aldehydes. There are many types of aldehydes, some that smell fatty, others burnt, and still more floral. The aldehydes in Chanel Nº 5, known as C-12, smell to many people like “winter.” By incorporating previously unimagined quantities of C-12 into novel combinations to produce Chanel Nº 5, Beaux created an odor that both made and changed history.

Some odors can be registered as trademarks. The first American scent mark was registered in 1991 for “a high impact, fresh floral fragrance reminiscent of plumeria blossoms” for embroidery thread. Other scent marks protect the “sweet, slightly musky, vanilla fragrance, with slight overtones of cherry, combined with the smell of a salted,
wheat-based dough” of Play-Doh molding clay and the “flowery musk scent” of Verizon Wireless stores. But these disparate scent marks share something: none are for perfumes, which cannot be registered as marks in the United States. As the U.S. Patent and Trademark Office has explained, “[s]cents that serve a utilitarian purpose, such as the scent of perfume . . . are functional and not registrable.” Consequently, the aldehydic bouquet of Chanel Nº 5 can never qualify for American trademark protection. Instead, perfumeries may turn to an alternative: copyright law.

Cronin predicted that, “[g]iven . . . the significant financial stake in [the perfume] industry held by U.S. concerns, it is inevitable that a U.S. court will soon encounter a prima facie dispute involving a copyright claim for a manufactured fragrance.” Copyright owners are granted exclusive rights in their work, like the right of reproduction. Protection is robust, though not indefinite. In the United States, an author’s copyright lasts for their lifetime and extends seventy years beyond death. But copyright only protects “original works of authorship fixed in any tangible medium of expression . . . from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device.” When it comes to perfumes, the qualifying questions are complicated because American courts have never addressed whether perfumes are copyrightable. However, French ones have—many times over.

In 1975, the Paris Court of Appeals became the first court to address whether perfume is copyrightable. French mainstream perfumery de Laire contracted with the luxury house of Rochas to create new scents for that house based on Laire’s own formulas, which it disclosed to Rochas. The perfumery later alleged that Rochas infringed copyrights in the perfumes by manufacturing its own identical fragrances. While the Court determined that de Laire’s formulas were not copyrightable, Claire Guillemin revealed why its decision was largely attributable to two

188 The mark is a scent of a sweet, slightly musky, vanilla fragrance, with slight overtones of cherry, combined with the smell of a salted, wheat-based dough, Registration No. 5,467,089; The mark consists of a flowery musk scent, Registration No. 4,618,936.
190 Cronin, Genius in a Bottle, supra note 110, at 429.
195 Id. at 436.
196 Id.
tactical errors.197 First, she explained, the error of nomenclature. In the lower court, de Laire repeatedly referred to their allegedly infringed perfumes as “inventions,” triggering a perception that perfumes are industrial rather than intellectual works, which would be better suited to patent protection.198 This perception was amplified by a second error: the erasure of noses, the so-called “authors” of perfumes.199 De Laire never named the perfumes’ noses in the litigation.200 Without evidence of authors whose personalities could be perceived through the perfumes, the Court declined to extend copyright protection to de Laire’s perfumes.201

Importantly, however, the Court did not hold that perfumes were not protectable by copyright law. To the contrary, the Court acknowledged that the list of copyrightable works of intellect (“œuvres de l’esprit”) was non-exhaustive, leaving open the door to further attempts to seek copyright protection for perfumes.202

Multiple such attempts were made, with mixed results, over the decades.203 But in a recent French Supreme Court case, copyrightability was again denied to perfume.204 According to the Court, fragrances are not sufficiently original to merit protection. The Court likened perfumers’ work to that of industrial artisans, like plumbers and carpenters, whose skills do not produce original works.205 Further, the Court held, fragrances are not works of authorship at all. Rather, “they are a product of the application of purely technical knowledge and lack, therefore a discernable association with the individual personalities of their

197 Id.; Claire Guillemin, LAW & ODEUR: FRAGRANCE PROTECTION IN THE FIELDS OF PERFUMERY AND COSMETICS (2016).
198 Id. at 44; Claire Guillemin, LAW & ODEUR: FRAGRANCE PROTECTION IN THE FIELDS OF PERFUMERY AND COSMETICS (2016).
199 GUilleMIN, supra note 110.
200 Id.
201 Id.
202 Id.
205 Id.
creators.”

Even in France, the heart of the Western fragrance industry, perfumes are not protectable by copyright.

French courts did not settle perfume’s non-copyrightability for Europe, let alone globally. Rather, the Dutch Supreme Court has taken the opposite approach, holding that perfumes are more than industrial or technical works because perfumes can bear the “personal imprint of the creator,” transforming scents into works of authorship.

While the issue has never been litigated, it seems likely that American courts would lean toward the Dutch analysis of authorship because the bar is so low. Confronted with the copyrightability of phone books, which used to publish the names and contact information for local residents, the Supreme Court determined that satisfying the originality requirement “necessitates independent creation plus a modicum of creativity.”

Facts, such as those contained in a phone book, could not qualify for copyright protection. However, Justice Sandra Day O’Connor elaborated that the standard is not a high bar, as “[t]here remains a narrow category of works in which the creative spark is utterly lacking or so trivial as to be virtually nonexistent.”

Perfumes may differ from other recognized works of authorship, such as symphonies or paintings, but they do not lack creative spark. Rosin likened perfumery to poetry, stating that “the perfumer mindset and training has to do with figuring out the vocabulary and the nomenclature of scent and really like, what does it mean to be citrus or citric? . . . You know it’s sweet, [but] what’s a sweet smell? Like sugary sweet, is it like candied sweet? Is it burnt sweet? Is it maple sweet? Is it flowery sweet? There’s so many different [sweetnesses]—is it cavity-inducing saccharine?”

Alternately, Nordstrand linked perfumery to programming, another copyrightable art, by saying that “there is definitely a very scientific and mathematical area of perfumery, which you know, directly relates to the composition, you’d have to think creatively . . . So I could definitely see a connection to coding.


207 Lancôme/Kecofa, Hoge Raad der Nederlanden [H.R.] [Sup. Ct. of the Netherlands], June 16, 2006, AMI 2006/5, at 161 (ann. Quaedvlieg) (Neth.); Cronin, Genius in a Bottle, supra note 110, at 428.

208 Feist Publ’,ns, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 340 (1991); see also H.R. REP. NO. 94-1476, at 51 (1976) (“The phrase ‘original works of authorship,’ which is purposely left undefined, is intended to incorporate without change the standard of originality established by the courts under the present [1909] copyright statute.”).

209 Feist, 499 U.S. at 360.

210 Id. at 359.

211 Rosin interview, supra note 23.
something very mathematical and analytical.”

McCartney, however, views her fragrances as fleeting, “a bit more like kind of invisible sculpture or watercolors.”

Artistic analogies aside, Ernst Beaux imbued the formula for Chanel No. 5 with, to paraphrase the Dutch court, a “personal imprint” capturing his experiences: the fragrance’s abundance of sparkling aldehydes. Chanel No. 5 was not the first fragrance to use aldehydes—that was Houbigant’s Quelques Fleurs in 1912—but Beaux was inspired to incorporate their icy effervescence because of his experience serving in the military during World War I, when he was stationed near the Arctic Circle. To some, including Beaux, aldehydes’ olfactory association with winter captured those experiences. Beaux’s invocation of the Arctic Circle was layered. Not only was it personal, but that decision reflected a deep knowledge of the audience he most needed to impress: Coco Chanel. Beaux was introduced to his client by her lover, Russian Duke Dmitri Pavlovich Romanov (of the Romanovs), who helped murder Rasputin.

Rooted in her lover’s Russian heritage, Chanel may have shared an affinity for the crisp scent of winter air. Not only do many consider Beaux a brilliant artist—Chanel No. 5 is regarded as the most iconic fragrance by many—but it is entirely plausible that American copyright law would recognize him as an author as well.

The nose’s profound impact as a perfume’s author has led some, including David Einhorn and Lesley Portnoy, to conclude that perfumes are copyrightable in the United States because perfumers are obviously authors. As Cronin reflected, however, “[w]hether a perfume may be a ‘work of authorship’ is a more subtle question than whether it may be

212 Nordstrand interview, supra note 127.
213 McCartney interview, supra note 12.
216 MAZZEO, supra note 90, at 57.
218 Cronin, Lost and Found, supra note 10, at 277–79; Einhorn & Portnoy, supra note 206, at 8.
fixed.” Fixation requires that works be “sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration.” Importantly, fixation occurs when the work “can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device.” And while perfumes are perceived through the sense of smell, scents are neither permanent nor stable.

Perfume is carefully chemically structured to develop as it dries down. Top notes disappear, leaving behind heart and base notes. These notes are chosen to create harmonious odors at each stage of evaporation. Indeed, the perfume industry has an entire vocabulary for expressing the ephemeral nature of fragrance: “longevity” reflects how long a scent can be perceived (which is always less than indefinitely), and “sillage” represents the strength of the scent trail left by perfume (which can be strong or weak or nonexistent and also fades with time). The Dutch Court decision recognizes that the copyrightability of perfume is premised on the assumption that “scent is entitled to protection under copyright law, as incorporated in the olfactory substance contained in the perfume bottles.”

However, simply comparing scents from two flasks of fragrances, as the French and Dutch courts apparently did, does not fully capture the characters of those fragrances, let alone their similarities and differences. Sniffing perfume from a flask is contrary to best practices. Scents are best smelled from skin or “scent strips,” which are small, sturdy strips of paper that facilitate smelling perfumes. There are even proper methods of sniffing a scent strip, such as the “bunny sniff” or “fly by” methods, neither of which are mentioned in the courts’ opinions. But smelling from the bottle presents an even bigger problem: perfumes are not built for bottles. They’re built for bodies.

Chanel has long recognized the intimate connection between scent and skin. So much that the luxury house inadvertently provided reason to

219 Cronin, Genius in a Bottle, supra note 110, at 451.
222 Basic Perfume Primer, supra note 57, at 11.
224 Jehoram Herman Cohen, Shall the Perfume Scent Decision of the Dutch Supreme Court Conquer the EU and the World or Will It Perish, 54 J. COPYRIGHT SOC’Y U.S.A. 571, 572 (2007).
225 Einhorn & Portnoy, supra note 206.
226 Basic Perfume Primer, supra note 57, at 11.
227 Id. at 12.
228 AFTEL, supra note 52, at 3–4.
reject the notion that fragrances are fixed. A 1956 Chanel Nº 5 campaign adopted the slogan, “Chanel becomes the woman you are.”229 It cooed, “[a] perfume is different on women because every woman has a skin chemistry of her own,” and continued, “Chanel becomes you because it becomes you.”230 Differences in skin chemistry are under-researched, but variations can be introduced by pH balance, skin texture, diet, and environment.231 Michael Nordstrand, an independent American perfumemaker, explained that, when designing fine fragrances, he is “thinking chiefly of skin . . . but also hair, and fiber, different fiber. And then also thinking . . . about, you know, atmospheric conditions and things like that.”232 Not only can different bodies shift scents, but bodies sense scents differently. The human sense varies by sex, age, hormones, environment, and other health factors.233 Chanel’s advertisement marketed the fundamental, fleeting flexibility of fragrance, the very opposite of fixation.

As Jeanne Fromer and Chris Sprigman have noted, fixation serves an important evidentiary function: it enables judges and jurors to compare two works to see whether there has been infringement.234 That function is undermined when odors smell radically different between bottle and body, as well as on different bodies, through different bodies, and in different environments.235 As Cronin explained, “[o]ur ability to conjure and reproduce a scent is drastically inferior to our ability to do the same with an image or sound.”236 However, even the Dutch Supreme Court seems likely to deny copyright protection, as the Court recognized that “scent itself is too fleeting and variable and dependent on the

229 MAZZEO, supra note 90, at 11.
230 Id. The extent to which this is biochemically accurate is disputed, but it remains a lively point of discussion (and marketing) among perfumers.
232 Nordstrand interview, supra note 127.
234 JEANNE C. FROMER & CHRIS JON SPRIGMAN, COPYRIGHT LAW: CASES AND MATERIALS 18 (2023 ed.). This casebook is open source under a Creative Commons license.
236 Cronin, Genius in a Bottle, supra note 110, at 446. He also objects to copyrightability for fragrances given the “dramatic differences in human acuity among the senses,” which he discusses in greater depth. Id. at 444; see generally id. at 427–447.
Several interviewed perfumers echoed the sentiment that fragrance is fleeting. Fleeting, variable, dependent—all variations supporting the conclusion that fragrance is not fixed. It follows that odor is also not copyrightable, at least in the United States.

3. Illustrating Proprietary Strategies

a. Molecules as Patentable

Chanel Nº 5 is famed for its aldehydes, but it is also a zoo. Its notes include castoreum from the urine-filled sacs of beavers, ambergris from the vomit of whales, and musk from the caudal glands of the male musk deer. There is also another animalistic note underpinning the perfume. In 1972, Jacques Leal, then the London Chairman of Chanel, revealed that a key ingredient in Chanel Nº 5 was the “sweat of the whipped Abyssinian civet cat.” In an interview, Leal confided that “[w]e don’t usually like to admit, but it’s one of those ancient techniques the Chinese invented.” He explained that “[t]hey put the cat’s head into a sort of torture chamber, whip it, the cat gets mad, and it gives off a glandular secretion.” Perhaps mistaking the source of the interviewer’s concern, Leal clarified, “[g]ood heavens . . . a Frenchman wouldn’t whip cats. [W]e just buy the stuff in bottles. Don’t ask me how many whipped cats go into a year’s output. I wouldn’t dare hazard a guess.” Animal rights activists did hazard a guess, however, and Leal’s remarks sparked


238 McCartney interview, supra note 12; Charra interview, supra note 93.


240 Id. Fact check: the liquid is decidedly not sweat—it is the secretion from perineal glands from both sexes of civet cat. R.M. Randall, Perineal Gland Marking by Free-Ranging African Civets, Civettictis Civetta, 60 J. MAMMALOGY 622, 623–25 (1979).

241 Boese, supra note 239.

242 Id.

243 Id. Fact check: Chinese were not the first perfumers to pioneer using civet; that distinction belongs to Arabic perfumers from the 10th century. Civet, THE PERFUME SOCIETY (2023) https://perfumesociety.org/ingredients-post/civet [https://perma.cc/TF3E-EHNW].
decades of protest regarding Chanel’s use of the civet cats’ secretion, also called civet.\textsuperscript{244}

During our interview, McCartney shared a spritz of vintage Chanel N° 5 from 1947, when natural animal materials were still used, and I was struck by the incredible depth and complexity of the civet.\textsuperscript{245} At low concentrations, the liquid produces a smoky, musky scent that lends complexity and longevity to perfumes.\textsuperscript{246} The unusual odor complements other scents while remaining potent as a standalone note. Several niche perfumes, including Zoologist’s Civet and Meleg’s Civet Cat Chypre, even celebrate civet by making it the focal note in their fragrances.\textsuperscript{247}

But civet is a complicated smell. At higher concentrations, the odor veers away from curiously compelling into what Mandy Aftel evocatively dubs “faecal floral.”\textsuperscript{248} That scatological scent largely comes from a chemical called civetone ((9Z)-Cycloheptadec-9-en-1-one), initially isolated by chemist Erwin Sack in 1915.\textsuperscript{249} Civet’s distinctive smell also comes from smaller amounts of indole (2,3-benzopyrrole) and skatole (3-methylindole).\textsuperscript{250} Indole is a prominent feature of orchids, jasmine, and decaying corpses; skatole is found in mammals’ feces.\textsuperscript{251}

Given these components of civet’s chemical composition, it is unsurprising that the unadulterated odor is unabashedly funky.\textsuperscript{252}


\textsuperscript{245} And its disturbing origin.\textsuperscript{246} MANDY AFTEL, ESSENCE AND ALCHEMY: A BOOK OF PERFUME 88–89 (1st ed. 2001).


\textsuperscript{248} Mark C. O’Flaherty, Musk-Have Scent: The Kinky Allure of Civet, FIN. TIMES (Sept. 22, 2022), https://www.ft.com/content/99a13235-cdb9-431b-b8f1-e52ce4a10486 [https://perma.cc/Y4HN-8HGA]. According to some perfumers, the “faecal” part of “faecal floral” is part of the point. Id. “Our attraction to [civet] can be explained by something quite obvious,” reveals niche perfumer Roja Dove, “[i]t smells of the anus. So, when we get a whiff of it, our brain knows what’s nearby. It’s a trigger.” Id.

\textsuperscript{249} Civetone, 18 THE PERFUMERY AND ESSENTIAL OIL RECORD 156 (1927).


\textsuperscript{251} Anonis, supra note 250, at 45.

\textsuperscript{252} Fragrances using civet remain alluring to civet cats. Fun fact: Calvin Klein’s Obsession For Men, which contains significant proportions of civet, is used by field biologists studying the wild cats to attract them. Jason G. Goldman, You’ll Never Guess How Biologists Lure Jaguars to
Today, civet used in perfumes is almost always synthetic—including the civet in Chanel Nº 5, as of 1998. Novel methods for synthesizing civet are subject to patent protection, which extends to inventions or discoveries of “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.” Unlike other forms of IP, patent terms extend 20 years. However, like trademarks, prospective inventions must be filed with the U.S. Patent and Trademark Office publicly. This approach, as Lisa Larrimore Ouellette has explored, creates a “quid pro quo of the patent system: the inventor receives the exclusive patent right in exchange for fully disclosing the invention to society, rather than keeping the invention secret (such as with trade secret protection).”


Public patent disclosures are how we know that, since 1955, there have been multiple American patents covering processes for synthesizing the key scent-creating chemical in civet, civetone. Most have expired, enabling perfumers and composition houses to use those methods freely.

One of the most recently granted patents for synthesized civetone, however, remains in effect. In 2018, composition house Takasago applied to patent its “invention relate[d] to recombinant microorganisms and methods for producing macrocyclic ketones and macrocyclic ketone precursors.” Takasago’s process to synthesize civetone is not limited to that material, however. The house’s patented process can also be used to synthesize other important ketones used in perfumery, like muscone, the chemical that gives deer musk its signature odor. Synthetic musk also happens to be an important base note in Chanel Nº 5.

Such synthetics can be valuable to those that patent them. Two years prior to filing its dual civetone/muscone patent, Takasago patented a process for synthesizing a specific molecule called “1-muscone,” which was known within the industry but never marketable until Takasago figured out its efficient, novel method. The molecule is considered indistinguishable from natural musk, yet no deer are harmed in its making. Just a small amount of 1-muscone produces a significant olfactory impact. Ernst Beaux would almost certainly approve of its adoption by Chanel. “Henceforth, . . . it will be the responsibility of

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258 Patent Reg. No. 2790005 (preparation of civetone and its homologs); Patent Reg. No. 3070625 (process for the preparation of azelaic acid semi-ester suitable for making civetone dicarboxylic acid); Patent Reg. No. 3235601 (process to produce civetone and homologues). However, the first identifiable patent for synthesizing civetone is Swiss, dating back to 1928. CH No. 136543 (process for preparing civetone).


261 Id.


264 Some species of musk deer are endangered because they were hunted nearly to extinction for their scent glands. Paras Bikram Singhth, Janak Raj Khatiwada, Pradip Saud & Zhigang Jiang, mtDNA Analysis Confirms the Endangered Kashmir Musk Deer Extends Its Range to Nepal, SCIENTIFIC REPORTS (Mar. 20, 2019), https://www.nature.com/articles/s41598-019-41167-4 [https://perma.cc/Z3E9-3LYJ].

265 Burr, Ahh, the Seductive Fragrance, supra note 263.
research chemists to discover new molecules to permit original notes to see the light of day,” he proclaimed, “[t]he future of perfume lies in the hands of Science.”

Patents present a complicated approach to shielding perfume-related processes from public appropriation. While the Patent Office dedicates entire categories of inventions to “essential oils” and “perfumes,” perfumemakers rarely avail themselves of those paths to protection. As Cronin explained, “the trade-off between patent’s twenty-year term of monopolistic control and full disclosure of the patented invention [is] unpalatable to the fragrance industry. This is not only because the market for many of the industry’s high-end products lasts more than twenty years, but also because longevity in the marketplace of some of these products actually makes them more valuable over time.”

Alex Charra and Michael Nostrand, as well as perfume writer Chandler Burr, note that perfumemakers dub this phenomenon “captivity,” which gives rise to so-called “captive molecules.” Considering that iconic fragrances can have significant staying power—Chanel No. 5 has been a perennial best-selling perfume for more than a century—patent protection can feel more like a problem than a powerhouse option.

Composition houses, like Takasago, are in a different situation. Unlike perfumeries, the business of composition houses is not solely centered on producing completed perfumes. Composition houses also sell raw ingredients, and they sell lots of those. By investing millions of dollars into developing new captives—which Nordstrand describes as “a layer on top of patent”—composition houses can recoup their investments both by selling captives directly to perfumers and selling captives to competitors midway through their patent terms, options that...
are generally unavailable to perfumers. But captives can price aspiring perfumemakers, including independent ones, right out of the equation. Jonathan Warr, who works in research and development at Takasago, explained that I-muscone is very much “a luxury material . . . costing high four figures per pound.” Most aspiring perfumemakers do not want or need commercial quantities of captives, and prices by the pound (or more) will far exceed their purchase power.

b. Formulas as Trade Secrets

Ernst Beaux authored it when he created Chanel Nº 5. Several years later, Pierre Wertheimer and his brother, Paul, learned it when they established Parfums Chanel alongside Coco herself. Henri Robert must have used it when he became Chanel’s in-house nose. And Jacques Polge, Chanel’s third nose, sampled it to create a lighter version in the 1980s. “It” being the original formula for Chanel Nº 5. While a handful of stewards of the Chanel Nº 5 formula are known, it’s a mystery how many other people have known or currently know it.

Knowing notes can be crucial to perfume purchasers’ decision-making, some aspects of Nº 5’s composition are no secret. The fragrance’s funky animalistic notes, such as civet and musk, are famous. Chanel highlights aldehydes, rose, jasmine, citrus, and bourbon vanilla in their Chanel Nº 5 marketing materials. Perfume enthusiasts routinely crowd-source the remainder of the scent’s composition by combining their noses with bits of publicly available information:

**Top Notes:** Aldehydes, ylang-ylang, neroli, bergamot, lemon

**Heart Notes:** iris, jasmine, rose, orris root, lily-of-the-valley

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272 Id.; Nordstrand interview, supra note 127.
273 Burr, *Ahh, the Seductive Fragrance*, supra note 263.
274 Nordstrand interview, supra note 127.
275 MAZZEO, supra note 90, at 93.
276 Chief Perfumer Henri Robert, FRAGRANTICA, https://www.fragrantica.com/noses/Henri_Robert.html [https://perma.cc/9UET-HVES]. Robert was raised in Grasse by his father, a Chief Perfumer. Before joining Chanel, Robert was the Chief Perfumer at Coty. TK. Id.
278 The lack of secrecy can even extend to sourcing. It has long been public knowledge that Chanel purchases and processes the last remaining jasmine harvest from Grasse, courtesy of its longtime relationship with the Mul family, who owns the fields. Id.
279 Boese, supra note 239.
280 Nº 5 *Eau de Parfum Spray*, supra note 125.
Base Notes: civet, musk, amber, sandalwood, vanilla, moss, vetiver, patchouli.281

However, notes are not a formula. The Chanel Nº 5 formula includes the proportions and often sources of these notes, not just their identities. Those details remain a secret.

Cronin explained that “[t]he modern fragrance industry has a longstanding reputation for exceptional secrecy,” a tradition that dates to the early perfumery industry in France.282 In contemporary perfumery, that secrecy takes the form in intellectual property. Perfume formulas can be shielded as trade secrets, not unlike Carthusian monks’ formula for their Chartreuse liquor.283 Trade secret law protects confidential information from (mis)appropriation.284 During the nineteenth century, trade secret protection developed at common law to promote, as the Supreme Court put it, “[t]he maintenance of standards of commercial ethics and the encouragement of invention.”285 Unlike most other forms of intellectual property law, trade secret law was long governed by state law, and nearly every state, district, and territory adopted some variation of the Uniform Trade Secrets Act (UTSA), a model law drafted by the Uniform Law Commission to help states standardize trade secret law.286


282 Cronin, Lost and Found, supra note 10, at 267.

283 Fun fact: one of the earliest trademark cases in the United States involved a trademark dispute over the trademark for Chartreuse liquor, known for its bright green or yellow coloring and bitterly herbaceous flavor, which was challenged by the monks who fled to Spain against interlopers who overtook liquor distilling and exporting operations in the Chartreuse region of France. Baglin v. Cusenier, 221 U.S. 580, 586-589 (1911). The interlopers’ product was found infringing, and the monks prevailed. Id. at 599. Today, the full formula for Chartreuse is known by only two monks at a time, making it one of the longest lasting trade secrets in history. Marion Renault, An Elixir From the French Alps, Frozen in Time, N.Y. TIMES (Dec. 17, 2020), https://www.nytimes.com/2020/12/17/business/chartreuse-monks-coronavirus.html [https://perma.cc/4REE-VH5A]. The monks recently announced that they would be pulling back production of both green and yellow Chartreuse “to focus on their primary goal: protect their monastic life and devote their time to solitude and prayer.” Jason Wilson, Where Has All the Chartreuse Gone?, EVERYDAY DRINKING (Feb. 24, 2023), https://www.everydaydrinking.com/p/where-has-all-the-chartreuse-gone [https://perma.cc/T5SN-XC9C].


Widespread adoption of the UTSA, as Sharon Sandeen has documented, served to streamline complex common law.287

Then, in 2016, Congress enacted the Defend Trade Secrets Act (DTSA), which borrowed language from the Uniform Trade Secrets Act to create the first federal civil trade secret law.288 DTSA protections extend to information, including “formulas” that “derive[] independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other person who can obtain economic value from its disclosure or use” when the information is “the subject of efforts that are reasonable under the circumstances to maintain its secrecy.”289 Like trademark rights, well-maintained trade secrets can last indefinitely, which has led scholars like Michael Abramowicz and John Duffy to theorize that trade secrecy can, theoretically, offer “even more powerful incentives than patents.”290

If that was once true in the fragrance industry, it is no longer. A decade ago, the International Fragrance Association (IFRA), a leading global representative of the fragrance industry, released a report characterizing trade secrets in perfumery as “valuable yet vulnerable.”291 Those vulnerabilities persist, courtesy of technological creations of and calls for transparency in fragrance formulas.

Regulators, consumers, and activists have long demanded greater transparency in perfumery, albeit for very different purposes. In 2004, the European Union began requiring that perfumes sold in Europe be labeled with potential allergens.292 Nearly two decades later, California enacted the Cosmetic Fragrance and Flavor Ingredient Right to Know Act, which requires makers to list every fragrance and ingredient on one of the lists identified in the Act293 Retailers and activists have responded to these and other calls for transparency by asking perfumers to release all their ingredients for a range of reasons, which includes promoting “clean beauty,” protecting the environment through sustainable practices, and

form of IP, is likewise governed by state law. TK. For a deeper dive into the right of publicity, see JENNIFER E. ROTHMAN, THE RIGHT OF PUBLICITY: PRIVACY REIMAGINED FOR A PUBLIC WORLD (2018).

287 Sandeen, supra note 284, at 520.
293 S.B. 312 (Cal. 2020).
precluding carcinogenic ingredients.\textsuperscript{294} If all these demands were taken at face value, perfumers might be required to release their full formulas.

As De Laire experienced in its copyright infringement lawsuit, and IFRA noted in its report, however, disclosing formulas can inadvertently position former collaborators to compete at lower prices at later times by appropriating proprietary formulas.\textsuperscript{295} Chanel seems to credit at least some of those concerns, as the luxury house still provides limited information about the ingredients, let alone formula, of Chanel N° 5.\textsuperscript{296} But some perfumers are embracing transparency, at least in certain circumstances. In September 2021, licensee L’Oréal, the largest cosmetics company in the world, launched a “transparency initiative” for its luxury brand Yves Saint Laurent, which happens to make one of the most popular perfumes: Black Opium.\textsuperscript{297} L’Oréal committed to providing publicly “95% [of ingredients] by weight of the ingredients present in the pure fragrance” yet “[m]inority substances only represent 5% by weight. They allow the perfumers’ know-show to remain a secret, as they are exclusive materials that make the character of the composition unique.”\textsuperscript{298} The licensee was joined by leading composition houses International Flavors & Fragrances (IFF) and Firmenich in their collective efforts “to be more transparent about the composition of our fragrances in response to growing demand from consumers, NGOs and retailers for better information about product composition.”\textsuperscript{299}

In practice, L’Oréal’s initiative requires rooting around the Yves Saint Laurent website to uncover a tab that provides consumers (and competitors) with Black Opium’s predominant notes, which are


\textsuperscript{296} N° 5, CHANEL, [https://www.chanel.com/us/fragrance/p/120150/n5-parfum/] [permalink needed].

\textsuperscript{297} Our Policy of Transparency in Fragrances, L’ORÉAL, https://inside-our-products.loreal.com/our-approach/our-policy-transparency-fragrances [https://perma.cc/5HRE-4B86]. The name is a real choice, discussed infra Section III.B.

\textsuperscript{298} See Nudelman, supra note 294; L’ORÉAL, supra note 297. Of course, the brand discloses allergens, as required, even if they are not “necessary” to the transparency initiative. Id.

identified by chemical composition, plain-language description, and classified by fragrance family.\textsuperscript{300} Despite these transparent disclosures, Yves Saint Laurent continues to sell upwards of 887 bottles of Black Opium each day.\textsuperscript{301}

Engaging in transparency like Yves Saint Laurent does not protect perfumes’ formulas from so-called “dupes,” short for duplicates, a market unique to the fragrance industry.\textsuperscript{302} Neither knockoffs nor counterfeits, dupes are often nearly identical chemical copies of popular perfumes sold by third-party corporations.\textsuperscript{303} Dossier is one of the leading makers of dupes—its close recreations of luxury fragrances sell for a fraction of the authentic perfume’s price.\textsuperscript{304} Its 1.6 ounce bottle of Floral Aldehydes which Dossier markets as being “inspired by Chanel N°5,” costs just $29—a single ounce flask of Chanel N°5 is nearly fourteen times more, costing $355.\textsuperscript{305} Dossier’s methods remain something of a mystery, but companies and competitors can easily create dupes using technological reverse engineering.

As in some other areas of IP, like copyright, reverse engineering is a legal way to recreate works or know-how without engaging in infringement or misappropriation.\textsuperscript{306} Expert noses can reverse engineer complex scents, like N°5, by smell alone; doing so was often part of their training.\textsuperscript{307} Without comprehensive formulas to follow, however,

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\textsuperscript{300} Black Opium Eau De Parfum, YVES SAINT LAURENT, https://www.yslbeauty.com/intl/fragrance/fragrance-for-her/black-opium/black-opium-eau-de-parfum/WW-40701YSY.html \#tab= Musk-like [https://perma.cc/K9MA-MEDT], While Taskago’s 1-muscone captive is not on the menu, Black Opium contains at least four “musk like” notes, including oxacyclohexadecen-2-one (a soft woody, powdery musk) and 3-methylcyclopentadecanone (an elegant, soft musk with “animalic inflection”). \textit{Id.}


\textsuperscript{303} \textit{Id.}


\textsuperscript{307} \textit{BURR, supra} note 77, at 3–4.
aspiring perfume makers are unlikely to do the same using a sense they are still refining.

Dupe companies are unlikely to rely on noses, literally or metaphorically, to recreate fragrances. To reverse engineer perfumes, companies can deploy a duo of technologies, known as gas chromatograph/mass spectrometers (GC/MS).\textsuperscript{308} GC/MS machines use analytical systems to convert liquid fragrance samples into chemical components, which are separated based on each molecular weight—the same metric used to classify top, heart, and base notes.\textsuperscript{309} The effect of GC/MS reverse engineering is artistic, practical—and financial. Cronin detailed how these technologies offer perfumery clients, like mainstream perfumeries and luxury houses,

\begin{quote}
\begin{center}
a new means for negotiating lower prices for the development of new fragrances, as well as those for ongoing supplies of already commissioned products. If a fragrance house balks at the price negotiated by a client for ongoing supplies of a product that it developed for the client, the client could reverse engineer the fragrance, and then buy supplies of it at a lower price from a competitor of the initial supplier. The competitor would have legitimately obtained the formula without incurring the cost of creating it.\textsuperscript{310}
\end{center}
\end{quote}

Technological reverse engineering is the purview of competitors, particularly composition houses. As soon as new perfumes are released, samples are fed into corporate GC/MS machines, which can cost at least $30,000, for analysis.\textsuperscript{311} That cost all but ensures that the technologies are only used by commercial perfumers. Aspiring perfumers cannot

\textsuperscript{308} Olivia Su, Note, Odor in the Courts! Extending Copyright Protection to Perfume May Not Be So Nonscenttical: An Investigation of the Legal Balwarks Available for Fine Fragrances and Advancing Reverse Engineering Technology, 23 S. CAL. INTERDISC. L.J. 633, 674–75 (2014); Cronin, Lost and Found, supra note 10, at 270–73. Fun fact: law enforcement requested fragrance formulas from perfume houses so they could be compared using GC/MS machines to identify suspects’ perfume and cologne; the houses declined to participate. McCartney interview, supra note 12.


\textsuperscript{310} Cronin, Lost and Found, supra note 10, at 271–72.

\textsuperscript{311} Id. at 128 (“Everyone in the industry knows that the first twenty bottles of IFF’s perfumes are bought by IFF’s competitors, who take them back to the labs where the techs ‘shoot’ the juice . . . the machines crunch it, the techs eyeball the molecules, fill in the gaps with a little wizardry, do a polish, and send the formula directly to the hard drives of the executives.”); Agilent 7890/5975C/7693 GC/MS System, LABX (2023), https://www.labx.com/item/agilent-7890-5975-c-7693-gc-ms-system/4343601 [https://perma.cc/7TGM-KCE9].
afford purchasing GC/MS machines to reverse engineer scents to sample—they even struggle to purchase raw ingredients.\footnote{312} Further, Nordstrand noted that “it’s a job in its own entirety to learn how to interpret a GCMs correctly. And it’s never 100% accurate,” further limiting its usability by aspiring perfumers.\footnote{313}

Some noses resist GC/MS machines by loading their perfumes with inert natural ingredients that complicate the formula.\footnote{314} One molecular distillation of rose, the May rose varietal of which is central to Chanel N° 5, contains more than eighty molecules; different species’ distillations could consist of up to a thousand molecules.\footnote{315} Such efforts offer only delays, however, not deterrence. The prominence of dupes is proof, even as some perfumers believe that dupes’ pervasiveness stunts perfumery. As Yosh Han explained, “[i]f the resources spent on development and marketing were applied towards supporting original designs and educating consumers, the fragrance industry would evolve. Dupes are the equivalent of fast fashion.”\footnote{316}

Transparency, both in the form of disclosing a perfume’s formula and reverse engineering it, can be understood as an existential threat to trade secrecy in perfumes. Yet, trade secrets—and practical barriers—persist. Truly replicating Chanel No. 5 scent simply cannot be done without traveling back in time to acquire some of the last jasmine fields in Grasse, which are essential to its scent.\footnote{317} While Dossier offers an inexpensive dupe of Chanel N° 5, euphemistically called Floral Aldehydes, the original retains its allure: in the minute it took to read the preceding paragraph, Chanel sold two more bottles of N° 5.\footnote{318} While regulations, activism, and reverse engineering increasingly mean that trade secrets cannot deter competitors, trade secrecy retains a powerful value: it effectively ensures that aspiring perfume makers have limited access to formulas that they are free to make and sample.

\footnote{312} Denton-Hurst, supra note 18. Dawn Marie West began her fragrance career making candles because the materials were cheaper. \textit{Id}.  
\footnote{313} Nordstrand interview, supra note 127.  
\footnote{314} Some perfumers do not even share formulas with clients. \textit{Id}.  
\footnote{316} Jensen, supra note 302.  
\footnote{318}
B. Exposing Industry Inequities

Alongside IP, industry practices determine who can make perfumes and under what circumstances. At nearly the same time as Chanel N° 5’s introduction, an equally compelling scent swept through Paris. Its citrusy hint of bergamot is easy to imagine gracing the wrists of flappers. The fragrance fades to rich florals, such as jasmine, iris, and rose, surrounded by curls of vanilla that could fill jazz halls. It settles into a warm, resinous amber that would not feel out of place at a Cubist salon. Jacques Guerlain was inspired by the profound passion between Shah Jahan and his wife, Mumtaz Mahal. Guerlain named the fragrance Shalimar after the Shalimar gardens that Shah Jahan built to impress his wife. Like the gardens themselves, Shalimar has staying power. Its scent clings to coats and collars for hours, and it joins Chanel N° 5 as one of the best-selling perfumes in history.

While Guerlain’s Shalimar aims to celebrate people of color, those people are rarely represented in Western perfumery. “People who look like me are hardly ever a part of that world,” reflects Gwen Gonzalez, one of the few Black perfumers at a leading composition house. “The traditions of perfumery are so tightly bound to Old World ideas of what a perfumer is that sometimes this breeds unconscious bias,” Gonzalez.

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322 Id. Her name sounds familiar because Shah Jahan built the monumental Taj Mahal in her memory. See generally DIANA PRESTON & MICHAEL PRESTON, TAJ MAHAL: PASSION AND GENIUS AT THE HEART OF THE MOGHUL EMPIRE (2009).
323 While Shalimar launched in 1925, Guerlain developed the fragrance in 1921—production was held up over a competing perfumer’s trademark dispute. Shalimar de Guerlain: Discover This Vintage Fragrance, VINTAGE INDUSTRIAL STYLE (Apr. 19, 2017), http://www.vintageindustrialstyle.com/shalimar-guerlain-discover-vintage-fragrance [https://perma.cc/KCJ8-NB62].
325 Matlin, supra note 17; McCartney interview, supra note 12 (“The industry worldwide really is amazingly diverse, given that there are a lot of Arabic perfumers or a lot of Indian perfumers in countries, whether it’s traditions of perfumery, but where the West has pretty much taken over . . . ninety-five percent of all perfumes in the world are made by five companies.”).
326 Mazzone, supra note 17. She works at Givaudan. Id.
concludes. This bias is embodied by a Western mainstream industry that remains dominated by “white people, mostly men, sometimes women. And at the highest level, it’s like with any classical art form . . . as non-diverse as you can possibly imagine.” Guerlain himself personifies the stereotype of a perfumer as a white, male nose who formally trained in France. Confronted with biases about what perfumers “should” look like, many marginalized perfumers make the same choice as Dawn Marie West: teach themselves perfumemaking and pursue niche perfumery.

Those few marginalized perfumers who do find positions in mainstream perfumery often see their contributions rendered invisible. The names of noses are rarely credited prominently or publicly. When it comes to marketing flagship fragrances, advertisements tend to focus on celebrities, not noses. The commercial “faces” of fragrances are rarely people of color, further minimizing the visibility of marginalized people in the industry. Both forms of erasure ensure that marginalized perfumers do not see mainstream role models who look like them.

Problems are not only present with visual aspects of perfumery—it extends to terminology as well, which alternately renders marginalized people and non-Western places hypervisible. Guerlain proudly pioneered using a slur to describe Shalimar: “Oriental.” The label quickly metastasized to become an entire fragrance family, which remains in widespread use today. While individual perfumers and advocacy organizations are resisting and retiring the term, marginalized perfumers must navigate the word’s ubiquity.

327 Id.
328 Rosin interview, supra note 23. Rosin noted that the entry-level and lower ranks of the mainstream industry are markedly more diverse, particularly among Asian perfumers. Id.
329 Sylvaine Delacourte, Jacques Guerlain, SYLVAIN DELACOURTE PARIS (Nov. 17, 2017), https://blog.sylvaine-delacourte.com/jacques-guerlain-458d4e95524a [https://perma.cc/8QVC-VXAJ]. As a bonus, Guerlain was a nepo baby: his uncle founded the eponymous Guerlain perfumery, where he worked, and his brother labored alongside him designing perfume bottles. Id. For a definitive dive into the phrase and phenomenon that is “nepo baby,” a shorthand for people whose careers benefitted (or were born) from nepotism, see Nate Jones, How a Nepo Baby Is Born, VULTURE (Dec. 19, 2022), https://www.vulture.com/article/what-is-a-nepotism-baby.html [https://perma.cc/E76P-3RGC].
330 See infra Section II.B.
331 Id.
332 Guerlain, The Story of Shalimar, supra note 321.
The diversity crisis in perfumery garnered heightened media attention after the United States’ “racial reckoning” of 2020. Journalists, including Dianna Mazzone, Alexandra Garfinkle, Danielle Jackson, and Tembe Denton-Hurst, drew attention to the marginalized perfumers who do exist and who are thriving. Their niche practices are remaking the industry. “With the development of marketing and the explosion of the ’80s and ’90s, perfume became a commodity. Now, with niche, it’s back to luxury,” forecasted perfume expert Michael Edwards. But while marginalized perfumers revolutionize the industry, often from the outside, pernicious problems persist.

With Guerlain himself and Shalimar as guides, this Section illuminates a trio of challenges preventing perfumery from being an inclusive art and technology. Part A exposes the powerful role that pedigree, both in terms of nationality and training, plays in preventing marginalized perfumers from getting a foot in the door. Part B explores the erasure of noses, particularly women and people of color, through attribution and advertising practices that render marginalized perfumers invisible to aspiring ones. And Part C examines the persistence of the fragrance family “Oriental” throughout perfumery, which encapsulates the normalization of exclusionary practices. Aspiring perfumemakers cannot continue waiting for an industry intervention to democratize perfumery—they must seek a new path themselves, and more and more perfumers are already walking it.

1. Pedigree

Credentials are central to the perfume industry. As the commercial fragrance industry blossomed in France during the 17th century, it found its center in a small town called Grasse. Then, tanners covered the pungent stench of their wares by priming leather with perfumed pomades. Over time, the tanners abandoned their trade for perfumery.

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335 Garfinkle, supra note 17.

336 Beardsley, supra note 21. When I visited Grasse in Spring 2023, I was somewhat surprised to discover that the town still revolves around the perfumeries that operate businesses and museums there.

337 Id.
because it was more profitable.\textsuperscript{338} It was then that perfumery became was a family affair, an art passed from father to son.\textsuperscript{339} Today, Grasse—and France more generally—remains a self-proclaimed powerhouse in perfumery.\textsuperscript{340}

Grasse boasts one of the most prestigious perfume training programs in the world: the Grasse Institute for Perfumery.\textsuperscript{341} Attending the Institute is expensive. Tuition costs $15,000, exclusive of travel or lodging.\textsuperscript{342} It is exclusive. The Institute takes only twelve students a year.\textsuperscript{343} It is also exclusionary. While the Institute claims to cultivate a “diverse student body,” over a recent five-year stretch, only one student was Black.\textsuperscript{344} That lack of representation deters many marginalized perfumers from pursuing formal training, which—due to the industry’s emphasis on pedigree—effectively excludes them from much of mainstream perfumery.

“When I looked into places I could study, I realized how representation for Black perfumers is virtually nonexistent,” Dawn Marie West reflected.\textsuperscript{345} “Classically trained perfumers are chosen by lineage, so getting into school or going abroad is really difficult.”\textsuperscript{346} Compared with West, Guerlain embodied an archetypal nose. He studied as an apprentice with his perfumer uncle, who founded the eponymous Guerlain perfumery, formally trained in chemistry at the University of Paris, then joined the family business alongside his brother.\textsuperscript{347} So insular is the industry that, within the past fifteen years, a white man like Guerlain would be described as a “diverse” perfumer because he trained in Paris rather than Grasse.\textsuperscript{348} As McCartney put it, the French “managed this amazing marketing job—everybody thinks that the top perfumes are French, and the perfect house in France, and you have to go to France to learn how to make [perfume]. And [the industry] is still dominated by an awful lot of white blokes.”\textsuperscript{349}

\textsuperscript{338} Id.\textsuperscript{339} Mazzone, supra note 17.\textsuperscript{340} Perfumery is, however, becoming more global. See Perfumery Schools, BON PARFUMEUR, https://www.bonparfumeur.com/blogs/journal/perfumery-schools; McCartney interview, supra note 12; Charra interview, supra note 93.\textsuperscript{341} Who We Are, GRASSE INST. OF PERFUMERY (2023), https://www.grasse-perfumery.com/who-we-are [https://perma.cc/Q8P7-9R4Q].\textsuperscript{342} Denton-Hurst, supra note 18.\textsuperscript{343} Id.\textsuperscript{344} Id.; Who We Are, supra note 341.\textsuperscript{345} Denton-Hurst, supra note 18.\textsuperscript{346} Id.\textsuperscript{347} Delacourte, supra note 329. Fun fact: Guerlain’s brother designed the iconic Shalimar bottle, which looks like an opening fan. Guerlain, The Story of Shalimar, supra note 321.\textsuperscript{348} Mazzone, supra note 17.\textsuperscript{349} McCartney interview, supra note 12.
Excluding marginalized perfumers from formal training has consequences for the diversity of the mainstream industry. “Access to a formal fragrance education is an impediment, since historically, fragrance houses have been family-run French businesses, and access to a fragrance education is nearly entirely overseas,” reflected Kimberly Walker, the founder of niche perfumery Kimberly New York. She, like West and other marginalized perfumers, opted out of the industry’s gatekeeping. Walker took a year to study composition and chemistry through YouTube and articles before creating her own perfume line. The decision to work independently is complicated and personal, but it can enable marginalized people to bring their diverse experiences to perfumery without the industry’s baggage.

2. Erasure

When marginalized people do join mainstream composition houses or perfumeries, they can remain invisible. Unlike most arts, perfumes rarely credit noses prominently and, more often, not even publicly. “[F]or me,” reflected Nordstrand, “authorship is a really huge deal. I mean, every other form of art, even mathematical discoveries, robotics, whatever you want to say, all of these industries, credit is given to the author of the of the work.” In perfumery, that erasure has a legacy. “With respect to attribution,” Cronin acknowledged, “perfumes have long been akin to literary works from the Medieval and Renaissance eras. Literary texts from these times (e.g., Beowulf) often have anonymous authors, or their authorship is ascribed to a sponsoring king, or fictional muse”—or, in case of contemporary perfumes, a brand.

Unlike the celebratory treatment of Guerlain (the nose) by Guerlain (the perfume house), Santal 33’s sleek bottling, packaging, and website make no mention of Voelkl. Niche perfumeries, like Kimberly New York, are changing this practice. Its founder, Kimberly Walker, noted that she “never encountered a brand led by a Black, female perfumer” in her

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351 Jackson, supra note 17.
352 Id.
353 Nordstrand interview, supra note 127.
354 Cronin, Genius in a Bottle, supra note 110, at 452.
355 Santal 33, supra note 2; Santal 33 Le Labo, supra note 59; Larkworthy, supra note 5.
decade-long tenure as a luxury fragrance sales manager.\footnote{Mpinja, supra note 19.} Her branding is an antidote to erasure, with her name emblazoned on every bottle.\footnote{Ether for Men, KIMBERLY NEW YORK (2023), https://www.kimberlynewyork.com/category/ether-for-men [https://perma.cc/7HED-HPR2].}

Even if perfumers’ work was not unattributed, it is often buried behind the “faces” of fragrances. In Guerlain’s short film celebrating the legacy of Shalimar, the fragrance’s face is model Natalia Vodianova, who wears a vaguely Indian headdress while embracing a vaguely ethnically ambiguous man.\footnote{See, e.g., Zoë Holloway, 16 New Fragrances with a Famous Face Attached, BEAUTY DIRECTORY (Aug. 23, 2018, 12:05 PM), https://www.beautydirectory.com.au/news/fragrance/16-new-fragrances-with-a-famous-face-attached [https://perma.cc/9VUM-P6RK] (naming Saoirse Ronan for Calvin Klein Women, Poppy Delevigne for Jo Malone, Julia Roberts for Lancôme La Vie Est Belle, David and Victoria Beckham for their eponymous line, Emily Ratajkowski for Paco Rabanne, Cate Blanchett for Gorgio Armani Si Passione, Adam Levine for Yves Saint Laurent Y as faces for fragrances). However, there are more women of color rising as fragrance faces recently. When Zoë Kravitz was made the face of Yves Saint Laurent Black Opium, she critiqued the lack of industry diversity: “When you think of classic fashion houses, you don’t think of women of [color]. Especially with fragrance—which is a big deal as a lot of money is there. The fact that it has taken so long to trust a woman of [color] in this position is kind of sad, but it’s also amazing that we are finally here.” Victoria Diplacido, Zoë Kravitz On Being The Face Of A Fragrance As a Woman of Colour, ELLE CANADA (Dec. 17, 2018), https://www.ellecanada.com/beauty/fragrance/zoe-kravitz-on-being-the-face-of-a-fragrance-as-a-woman-of-colour [https://perma.cc/5BG5-A7ZR]. Lupita Nyong’o for Calvin Klein Women, Misty Copeland for Estée Lauder’s Modern Muse, and Ariana Grande for her own Cloud are other notable exceptions. Zoë Holloway, 16 New Fragrances with a Famous Face Attached, BEAUTY DIRECTORY (Aug. 23, 2018), https://www.beautydirectory.com.au/news/fragrance/16-new-fragrances-with-a-famous-face-attached [https://perma.cc/9VUM-P6RK]. Fun fact: unlike many celebrity fragrances, Grande’s is well-regarded among beauty insiders as a refreshing, wearable delight. Rio Viera-Newton, All My Beauty-Industry Friends Are Obsessed With Ariana Grande’s ‘Cloud’ Perfume, THE STRATEGIST (Sept. 23, 2020), https://nymag.com/strategist/article/ariana-grande-cloud-perfume-review.html [https://perma.cc/67ZJ-N368].} Vodianova is a white celebrity, and most fragrance faces follow a similar pattern.\footnote{Shawn Crenshaw, Timeless, OVATION FOR MEN (2023), https://ovationfragrance.com [https://perma.cc/AQ56-XF9A].} Niche perfumer Shawn Crenshaw put it bluntly: “Not one brand had a face or a representation of anyone that looked like me,” he explained, “It hit me like a ton of bricks that we as consumers held these designer brands in such high regard, but none of them—based on their marketing—held us equally in such high regard.”\footnote{Shawn Crenshaw, Timeless, OVATION FOR MEN (2023), https://ovationfragrance.com [https://perma.cc/AQ56-XF9A].} Crenshaw responded by prominently featuring Black men and women in his advertising for his signature fragrance, Ovation for Men.

Perfumery practices around attribution and advertising effectively eliminate the visibility of marginalized perfumers, which affects aspiring perfume makers’ abilities to identify role models in the industry. “There
. . . weren’t any examples of Black perfumers highlighted in the media, so Black people who were interested in becoming perfumers did not see Black mentors,” explained Walker. But not all perfumers are subject to erasure. That recent Shalimar advertising campaign centered and celebrated Guerlain’s talents as a nose. And, of course, his family name is still emblazoned across all the house’s perfumes and packaging.

3. Nomenclature

Guerlain proudly pioneered using the classification “Oriental” to encapsulate Shalimar. The term stuck. Over the past century, the word became an entire fragrance family unified by their persistent amber heart note and vaguely “exotic” ingredients. It’s difficult to overstate the term’s ubiquity. An online search for “Oriental perfume” returns nearly fourteen million hits. Not only is the word offensive—at the urging of Congresswoman Grace Meng, President Barack Obama eliminated the word from federal laws in 2016—the moniker is meaningless. Shalimar was not designed in Asia, developed by an Asian nose or dependent on Asian ingredients. The same is true of most of Shalimar’s fragrance family kin.

The fetishization underlying the term is not only inaccurate but also alienating to many perfumers. As Asian American perfumer Yosh Han observed, “No other industry, not chocolate, whiskey, coffee, tea, beer, nobody else uses this term. And the ones who are still wanting to uphold this say it just means ‘East,’ Well. Africa is not East, so . . .” These fragrances’ only connection to Asia and Africa is through a colonialist perspective of those continent’s places and people as sensual, mystical,

362 Jackson, supra note 17.
363 Guerlain: The Story of Shalimar, supra note 319.
365 Guerlain: The Story of Shalimar, supra note 319.
366 AFTEL, supra note .
367 The first page does include the Harper’s Bazaar piece critiquing the term. See Matlin, supra note 17.
369 Miller, supra note 20. Han’s Omnistar, created by Rodrigo Flores at composition house Givaudan, is a fig fragrance with tree leaves in the top note and fruit in the base note, grounded by base notes of musk, tea, hay, and cardamom. Omnistar Eau Fraiche Parfum, YOSH (2023), https://www.caudeyosh.com/new-products/omnistar-888.
and mysterious.370 Han invited the public to join her and other perfumers to push back on the term publicly by co-sponsoring a petition to rename the fragrance family, which has received more than 1,000 signatures.371

The problem with perfume nomenclature has persisted for nearly a century because of power. “[Perfume houses] use it because they believe they have the right to use it,” explained Asian American perfumer Sue Kim, “It’s an execution of privilege.”372 As a freelance consultant to independent perfumers, Kim combats the term’s use by contractually requiring her clients not to use it.373 Her approach works: every client has agreed.374

Perfumers’ individual and collective efforts to retire the word are amplified by organizations like The Fragrance Foundation (TFF), which was founded to promote diversity, equity, and inclusion in perfumery.375 One of its campaigns is retiring the slur from the fragrance lexicon. As TFF founder Linda Levy put it, the industry “need[s] to find another way to speak to the concept,” and TFF pushes perfumers to adopt one.376 During her outreach to European perfumers, Levy was clear: “We’re moving forward, and we’re changing this word, and it’s not an option. Every single member of the Fragrance Foundation is responsible for eliminating that word. I believe we can unite the community and find a way to make it right.”377 To date, author and perfumer Michael Edwards, the British Society of Perfumers, and CPL Aromas, among many others, have taken steps to eliminate the word from perfumery parlance.378

However, Asian perfumers are not a monolith, and not all of them reject the term “Oriental.” Niche perfume store manager Steven Gontarski, who is Asian American, understands the controversy but believes “it’s more a fantasy, which is why I think [O]riental is a perfect word for it. It’s not Asian, it’s not even real . . . I don’t think [the word] needs to be locked up and thrown away forever, we should still think about the history of perfume and use that word to describe a very specific

371 Reclassify “Oriental” and “Floriental”, supra note 334.
372 Yan, supra note 334.
373 Id.
374 Id.
376 Garfinkle, supra note 17.
377 Id.
378 Reclassify “Oriental” and “Floriental”, supra note 334.
Japanese perfumer Yasuyuki Shinohara, founder of Di Ser perfumery, uses the term because he believes it has a different connotation in Japanese perfumery. “In Japan, there are very few people who have a negative image of this word,” he explains, “We often use this word in perfumes, for example, oriental floral, oriental citrus, oriental beauty,” Shinohara explains.380 “This is because English does not have the best words to describe Japanese culture and art, so we use these terms when explaining them to Westerners. But in fact, we use the term ‘oriental’ to mean art and culture that is a mixture of East and West.”381

Despite mounting critique of the word, retiring it is still resisted.382 Luxury house Yves Saint Laurent continues characterizing its best-selling Opium perfume, itself a controversial naming choice, as “a spicy Oriental harmony for extreme sensuality.”383 While Guerlain itself retired the classification for Shalimar in 2021, it has not fully addressed the larger problem of exoticization: the perfumery still sells its Les Absolus d’Orient collection, which the house frames as “an invitation to transport the senses to the heart of a fascinating region, revealing some of its most precious secrets,” featuring fragrances that trade on fetishization like Encens Mythique and Bois Mystérieux.384

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380 Id.
381 Id.
382 In the wake of George Floyd’s murder, many companies responded to mounting public pressure and eliminated longstanding racist branding. See Sonia K. Katyal, Commentary, Brands Behaving Badly, 109 TRADEMARK REP. 819 (2019) (detailing corporate responses to offensive trademarks). But some industries also confronted nomenclature that was not limited to a single company, similar to widespread problems in perfumery. In computer engineering, for example, many programming languages use the racist language “master/slave” or “whitelist/blacklist,” both of which harken back to slavery, to describe core functionalities. Kate Conger, ‘Master,’ ‘Slave,’ and the Fight Over Offensive Terms in Computing, N.Y. TIMES (Apr. 13, 2021), https://www.nytimes.com/2021/04/13/technology/racist-computer-engineering-terms-ietf.html [https://perma.cc/APX2-3VSQ]. Potential replacements include swapping “master” for “primary” and “blacklist” for “blocklist.” Id. In academia, some programs and peer reviewers are replacing the ableist phrase “blind review,” which equates blindness with ignorance, with “anonymous review.” Shelley Tremain, Ableist Language and Philosophical Associations, NEW APPS: ART, POL., PHILOS., SCI. (July 19, 2011), https://www.newappsblog.com/2011/07/ableist-language-and-philosophical-associations.html [https://perma.cc/7E64-28QE].
The mainstream perfume industry is laden with exclusionary practices. Many would-be perfumemakers are precluded from fragrance educations and employment with perfumeries or composition houses, where they could practice their craft. However, compelling self-taught compositions reveal that French heritage and formal training are not prerequisites for producing provocative perfumes. Successful niche perfumeries demonstrate how customers can be compelled by noses’ stories, and many opt to highlight marginalized perfumers’ presence by featuring their names, photographs, and stories on marketing materials and packaging rather than hiring white celebrities to be “faces” of their fragrances. Coordinated advocacy also documents how many parts of the industry are ready to retire colonialist, racist tropes. Niche perfumers, many of whom are women and people of color, are using their practices and perfumes to dismantle elitism, erasure, and exclusionary practices in perfumery. A new approach is emerging—one that amplifies efforts to democratize the perfume industry.

III. POPULARIZING PERFUMERY THROUGH OPEN SOURCE PERFUMES

In 2012, Wilson-Brown founded the Institute for Art and Olfaction in Los Angeles, more than six thousand miles from Grasse. Her vision was to provide “public access to the practice of working with scent” through producing experimental projects; promoting visibility for independent, artisanal, and experimental perfumers and other artists; and providing accessible education for aspiring perfume makers. One example was a 2018 Perfume Design Challenge, hosted by the Institute offshoot Open Source Smell Culture, which invited participants to create fragrances inspired by the beloved Los Angeles mountain lion P-22.

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389 Mission, INST. FOR ART AND OLFAC TION, supra note 388.

Attendee Shelley Ray crafted a scent described as giving “Persian cat in the boudoir.”\(^{391}\) Madeleine Stearns designed a fragrance inspired by the sensations of “stalking . . . prey for 30 hours. Not too much sleep, hyperfocused and aware.”\(^{392}\) Last, MR created a scent that captured “not just the smell of a mountain lion but also the dry scrubby area it lives in and the synthetic note of its tracking collar.”\(^{393}\) The trio of perfumes have little in common olfactorily, but they share a radical commonality: their sources, descriptions, and formulas are provided publicly and free from restrictive IP, making them examples of “open source perfumes.”

Open-source perfumery is indebted to a movement that has nothing to do with fragrance—the free culture movement. In 1984, Stewart Brand, founder of the countercultural Whole Earth Catalog, made a proclamation that became a platitude: “Information wants to be free.”\(^{394}\) Valuing free information predates Brand’s pithy one-liner significantly. Libraries loaned resources to patrons for free over many centuries.\(^{395}\) The Supreme Court pronounced that its decisions were free to reproduce in

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\(^{391}\) OPEN SOURCE SMELL CULTURE, supra note 390 (while these perfumes are published using an open-source license, the document disables downloading, printing, and copying, somewhat restricting its practical utility as “open”).

\(^{392}\) Id.

\(^{393}\) Id.


1834, a position affirmed more than a century later. President Lyndon Johnson signed the Freedom of Information Act in 1966, which enables the public to access free knowledge about the inner workings of government. Across all three examples, however, IP owners—from publishers to authors to contractors—have argued that their rights can and should be permitted to restrict access to free information.

Such views have been vindicated by policy. In 1998, President Bill Clinton signed the Sonny Bono Copyright Term Extension Act, which many scholars and activists derisively described as the Mickey Mouse Act because the law coincided with when Disney’s copyright in the character was slated to expire. As teased by its title, the law extended copyright terms from fifty years beyond the life of the author to seventy years, and it did so retroactively. Works already in the public domain, like the prescient robotic dystopia film *Metropolis*, were pushed back under copyright for twenty more years. Works with copyrights set to expire on January 1, 1999, like Robert Frost’s classic poem “Stopping By Woods on a Snowy Evening,” would no longer join the public domain until much later. And works published in 1999, like Sugar Ray’s

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398 See Hachette Book Grp., Inc. v. Internet Archive, No. 20-CV-4160, 2023 WL 2623787, at *1 (S.D.N.Y. Mar. 24, 2023) (arguing against Internet Archive’s practice of controlled digital lending); *Public.Resource.Org*, 82 F.4th at 1265 (arguing against public display of technical standards); *State v. Loomis*, 881 N.W.2d 749, 753 (Wis. 2016). The iPIP Clinic has advised Internet Archive and filed an amicus brief in the recent *Public.Resource.Org* case. All discussion is based on public information. Other industries encounter battles over free information, but the publishing industry’s tension is perhaps the most perennial.


400 *Id.*


dirtbag earworm “Every Morning,” will not join the public domain until, at the earliest, 2093. The copyright landscape was radically reshaped.

Law professor and activist Larry Lessig—who literally wrote the book on free culture—was having none of it. In 2001, Lessig responded by collaborating with authors, artists, and activists to establish Creative Commons (CC). CC is a nonprofit that “help[s] overcome legal obstacles to the sharing of knowledge and creativity to address the world’s most pressing challenges.” CC does so by maintaining six plain-language licenses, all available in more than forty languages, that provide creators with flexible ways to share their work beyond restrictive copyright. Adopting CC licenses is easy: creators choose a license, communicate that choice to other people, and include a link to the license. While CC licenses were not built for perfumes, some are flexible enough to work for fragrances: all three P-22 perfumers released their work using a CC license that also qualifies as open source.

Prior to the rise of the free culture movement, Christine Peterson coined the broad term “open source” to describe software released with fewer or no copyright restrictions in terminology that was approachable to businesses and newcomers. It caught on. The open source

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403 Id. To be clear, I hope that all the songwriters of “Every Morning” live longer than that.


405 A History of Creative Commons, CREATIVE COMMONS, https://creativecommons.org/timeline. Lessig also responded by litigating, and losing, a landmark copyright case challenging the constitutionality of the Mickey Mouse Act, 7-2. Eldred v. Ashcroft, 537, U.S. 186, 193 (2003). Justice Ruth Bader Ginsburg delivered the majority’s decision. Id. As clinicians and practitioners will appreciate, Lessig later penned a piece reflecting that what the public domain had “needed [was] the help of a lawyer, not a scholar.” Lawrence Lessig, How I Lost the Big One, LEGAL AFFAIRS (Mar./Apr. 2004), https://www.legalaffairs.org/issues/March-April-2004/story_lessig_marapr04.msp. The IP/PI clinic has advised Creative Commons. All information discussed in this article is available publicly.

406 What We Do, CREATIVE COMMONS, https://creativecommons.org/about [https://perma.cc/QXN4-Y8XS].

407 About CC Licenses, CREATIVE COMMONS, https://creativecommons.org/about/cclicenses/ [https://perma.cc/GA4Z-B8TP].

408 Id.

409 Id.


movement began by granting authors copyrights in software, but it also expanded to another space: hardware. Publicly releasing designs of tangible artifacts in makeable, modifiable, distributable, and useful ways can qualify those artifacts as open source hardware.\footnote{Definition (English), OPEN SOURCE HARDWARE ASS’N (2023), https://www.oshwa.org/definition [https://perma.cc/AH86-4NUL].}

While open source hardware is popular for electronics, it can also be used to create “free” fragrances.\footnote{Certified Open Source Hardware Projects, OPEN SOURCE HARDWARE ASSOCIATION (2023), https://certification.oshwa.org/list.html [https://perma.cc/XU4D-XNRG] (identifying an entire category of “electronics”). For deeper dives into open source hardware, see John R. Ackermann, Toward Open Source Hardware, 34 U. DAYTON L. REV. 183 (2009); Dana Beldiman, From Bits to Atoms: Does the Open Source Software Translate to Open Source Hardware?, 35 SANTA CLARA HIGH TECH. L.J. 1045 (2018); Timothy Murphy, An Instance of Open Hardware: A Different Approach to Free and Open Source Hardware Licensing, 30 FORDHAM INTELL. PROP., MEDIA & ENT. L.J. 257 (2013).}

The Open Source Hardware Association (“OSHWA”) is the leading organization certifying hardware—meaning any tangible object, like perfume—that satisfies certain open source standards.\footnote{About OSHWA, supra note 22. As a Clinical Teaching Fellow in N.Y.U. Law’s Technology Law and Policy Clinic, I supervised a team of students advising OSHWA. All discussion is based on publicly available information.} In 2023, OSHWA certified the first open source hardware perfume, a simple fragrance called World Wide Web.\footnote{World Wide Web, supra note 25.}

Unlike the trio of P-22 perfumes, World Wide Web uses a CC0 license, which reserves no rights in the perfume’s descriptions or formula.\footnote{CC0, CREATIVE COMMONS (2023), https://creativecommons.org/share-your-work/public-domain/cc0/ [https://perma.cc/UPT3-77C5].}

Several more Internet-inspired perfumes have been certified by OSHWA, Search Engine, Touch Grass, and Buddy List.\footnote{Search Engine and Touch Grass, supra note 25.} Their sourcing, descriptions, and formulas are easily discoverable and accessible through the centralized OSHWA website.\footnote{World Wide Web, Search Engine, Touch Grass, and Buddy List, supra note 25.}

All of the existing OSHWA-certified perfumes were created and certified by an amateur perfumemaker with limited formal training: me.\footnote{I attended a perfumery workshop in Grasse, but it was light on theory; my introduction to perfumemaking was through Saskia Wilson-Brown’s online course with Atlas Obscura. Making Scents: Experimental Perfumery with Saskia Wilson-Brown, ATLAS OBSCURA (2023), https://www.atlasobscura.com/experiences/perfume-online-course [https://perma.cc/S5R7-32MU]. My open source perfumes were created through my Cyberspace and Technology (CAT) Lab, CYBERSPACE AND TECH. LAB (2023), https://www.catlab.tech [https://perma.cc/2TBG-5B38].}
Open source can be a powerful force for equity but, like perfumery, the movement has its own history with exclusionary practices. For decades, communities excused and enabled the misogynistic behaviors of leading figures of the movement, like Richard Stallman, as being merely eccentric. Exclusionary environments created by the overlapping free culture, open source, and free software movements may explain why their central figures mirror those of mainstream perfumery: white men with elite training.


The free culture and open source movements are bigger than a handful of men, but the backgrounds of the men mentioned in this Article are illustrative. Stewart Brand attended the Phillips Exeter Academy and Stanford University. Brand (Stewart) papers, ONLINE ARCHIVE OF CALIFORNIA, https://oac.cdlib.org/findaid/ark:/13030/t6199x310 [https://perma.cc/J53D-G3MJ]. Lawrence Lessig graduated from Wharton, the business school at the University of Pennsylvania,


However, the inherent inequity in open source is a bigger problem than the community’s composition. IP policies that prioritize equities over efficiencies should, as Madhavi Sunder puts it, promote “[e]conomic remuneration from cultural production” because creators’ works “will be an important source of revenue and stimulus for development.” Open source is at odds with this vision: it requires people to give away their labor for free. That ask is bigger for some communities than others. Kate Darling recounted resistance from Black women inventors from Detroit when she explained why MIT’s breast pump hackathon required acceptance of the event’s open source IP terms, and she quickly realized that their hesitancy was rooted in history. As Madhavi Sunder and Anupam Chander put it, an overly romantic notion of the commons fails to recognize that “in practice, differing circumstances—including knowledge, wealth, power, and ability,” as well as race, gender, and sexuality, “render some better able than other to exploit a commons.” When marginalized people are routinely denied both capital and credit for their creative contributions, many are understandably skeptical of a movement premised around giving up both.

In some ways, Wilson-Brown’s philosophies are aligned with those of the initial wave of free culture movements: a deep skepticism of solo ownership. As someone “interested in expanding the thinking around ownership within perfumery,” Wilson-Brown has observed perfumemakers’ reactions to ideas, such as some saying, “so and so is the first person to come up with this—and then someone else does it and they’re like, ‘Oh, you copied me.’ What is this competitiveness that we have? This obsession with being the first, the best, the most important? We’re all competing for a tiny prize: a few more likes on Instagram, at best. So, the idea with OSSC was to create structures and conversation around sharing information and, in so doing, help relieve everybody of the

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424 This time, free as in beer, not free as in speech.
425 Kate Darling, Toward a Feminist Cyberlaw A-Ha, in FEMINIST CYBERLAW (Meg Leta Jones & Amanda Levendowski, eds., forthcoming June 2024).
constant vigilance and fear.” Other perfumers see power in open source perfume. McCartney freed her best-selling fragrance, The Sexiest Scent In The World IMHO—30% Iso E. Super, 30% bergamot, 30% Cedramber®, and 10% vanillin—during the pandemic. Empowering people to create their own perfumes encourages existing perfumemakers. “I think accessibility is huge and important,” said Rosin, “I just want things that are accessible.”

In other ways, however, open source perfume is a meaningful departure from its inspiration. Unlike key open source movements of the past, no one person is the founder, let alone “father,” of open source perfume. To the contrary, its most visible supporters are women and people of color, including people who began with no formal training in perfumery. From the outset, perfumers aspired for open source perfume to be a democratizing force that encourages a diverse community of perfumers to create and contribute back to the movement by eliminating restrictive IP and industry gatekeeping.

Using the P-22 and World Wide Web open source perfumes as guides, this Section illustrates open source perfume in practice in three parts. Part A describes the terms of a particular open source CC license, the Attribution-ShareAlike license, and details why it addresses both legal and social barriers to sampling scents. While Open Source Scent Culture maintains a list of open source formulas, including those of the P-22 perfumers, only aspiring perfumemakers in the know will think to look there or many of the other scattered websites that host free formulas. This is why Part B documents the mechanics of using OSHWA certification and details why certification can amplify the reach of open source perfumery by creating a centralized database of freely sampleable scents. Connecting open source perfumery with a new wave of the open source movement creates opportunities to share perfumemaking broadly, as if it were something more familiar, like drawing or painting. By combining existing open source licenses with open source certification, aspiring perfumemakers of all kinds are empowered to democratize the art and technology of perfumemaking.

429 Nordstrand interview, supra note 127.
430 Saskia Wilson-Brown, board, me.
431 Institute for Art and Olfaction, supra note 390; supra III. B.
OPEN SOURCE PERFUME

2024]

A. Applying Open Licenses

While CC licenses were designed for poets, photographers, and programmers, they can also be used by perfumers to share detailed formulas publicly, while crediting creators’ contributions. The Open Source Smell Culture Formulas Database dedicates an entire tab of its formula database to fragrances made using a particular CC license: Attribution-ShareAlike.432 All three of the P-22 perfumemakers’ formulas use that license.433

Attribution-ShareAlike is one of CC’s open source licenses, and it grants other people broad rights to use the underlying work in exchange for observing specified requirements.434 Under Attribution-ShareAlike terms, anyone is “free to[ s]hare—copy and redistribute the material in any medium or format” and “[a]dapt—remix, transform, and build upon the material for any purpose, even commercially.”435 However, the Attribution-ShareAlike license is not without restrictions. Its “[a]tribution” term requires people to “give appropriate credit, provide a link to the license, and indicate if changes were made” in a way that does not suggest endorsement of the person or use by the licensor.436 Further, the “ShareAlike” term demands that any “remix, transform[ation], or build upon the [original]” be distributed under the same Attribution-ShareAlike license.437 Taken together, Attribution-ShareAlike provides aspiring perfumemakers a broad license to sample perfumes without erasing the nose’s work.

There is a hitch with using CC licenses to release open source perfumes. The terms of CC licenses apply only to “original works of authorship and other material subject to copyright.”438 The Open Source Smell Culture Formulas Database, which includes the P-22 fragrances, features three related parts that are potentially protectable by copyright

432 Id. There is also a tab for public domain perfumes, which does not address the attribution issues that erase the nose’s work in mainstream perfumery. Id.; supra II. B. 2.
433 Id.
434 CC BY-SA 4.0 Deed Attribution-ShareAlike 4.0 International, CREATIVE COMMONS, https://creativecommons.org/licenses/by-sa/4.0 [https://perma.cc/EHW9-EE7B].
435 Id.
436 Id.
437 Id. There is an additional term disallowing other restrictions, such as “legal terms or technological measures,” that infringe on the permissions granted by the license. Id.
438 Id. It also applies to “similar rights . . . [which] means . . . rights closely related to copyright including, without limitation, performance, broadcast, sound recording, and Sui Generis Database Rights, without regard to how the rights are labeled or categorized.” Moral rights, personality rights, privacy, patent rights, and trademark rights are expressly excluded from the license. Id. at 2.b.
law: the perfumes’ sources, descriptions, and formulas.\(^{439}\) The database displays those parts in a straightforward chart:  

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>SUPPLIER</th>
<th>DIL %</th>
<th>GRAMS</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Galbanum</td>
<td>EDN(^{441})</td>
<td>10</td>
<td>0.165</td>
<td></td>
</tr>
<tr>
<td>Geosmin</td>
<td>CP(^{442})</td>
<td></td>
<td>0.33</td>
<td></td>
</tr>
<tr>
<td>Tonquitone</td>
<td>PA(^{443})</td>
<td>10</td>
<td>0.825</td>
<td></td>
</tr>
<tr>
<td>Turmeric</td>
<td>WEL(^{444})</td>
<td>10</td>
<td>0.165</td>
<td></td>
</tr>
<tr>
<td>Cashmeran</td>
<td>PA</td>
<td>10</td>
<td>0.495</td>
<td></td>
</tr>
<tr>
<td>Ambrocinide</td>
<td>VIG(^{445})</td>
<td>10</td>
<td>0.495</td>
<td></td>
</tr>
<tr>
<td>Terpineol</td>
<td>PA</td>
<td>10</td>
<td>0.165</td>
<td></td>
</tr>
<tr>
<td>Alpha Acetate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abrinol</td>
<td>PA</td>
<td>1</td>
<td>0.165</td>
<td></td>
</tr>
<tr>
<td>Castoreum</td>
<td>CP</td>
<td>10</td>
<td>0.165</td>
<td></td>
</tr>
</tbody>
</table>

**FURTHER COMMENTS**

DIRTY KITTY PEE. DUST. MORNING DEW. COSY CASHMERAN. VERSION 1-4 CAME OFF TOO PAMPERED + PRETTY — PERSIAN CAT IN THE BOUDOIR — FLORAL + ANIMALIC, BUT GRAIN-FREE CRUNCHIES ANIMALIC. TERPINEOL + AMBRINOL AT THE END HELPED BRING IT BACK OUTDOORS, BUT MORE DUST + SUN WOULD BE BETTER.

\(^{439}\) The Institute for Art and Olfaction, *supra* note 431.

\(^{440}\) *Id.*


\(^{443}\) PA stands for Perfumer’s Apprentice (2023).

\(^{444}\) WEL stands for Wellington Fragrances (2023).

\(^{445}\) VIG stands for Vigon (2023).
A response to Helen McClory’s short fiction about LA mountain lion, P-22.

Each “material” used by Shelley Ray to produce notes is identified in a column by the names used by scent supply shops. The “supplier” column discloses those shops, which sell in quantities and prices that are manageable for aspiring perfumemakers. The “dil %” column defines the dilution percentage of each material, and the “grams” column identifies the weight of each material used in the perfume. Together, the material, dilution percentage, and grams columns list the formula; the supplier column shares sourcing information for those materials.

Neither the perfume’s formula nor sourcing qualify for copyright protection. Fragrances’ formulas are uncopyrightable because, as the Copyright Office has noted, “[a] mere listing of ingredients or contents, or simple set of directions, is uncopyrightable.”446 Sourcing information, such as whether an ingredient was purchased from Perfumer’s Apprentice, are akin to a phone book: comprised of uncopyrightable facts.447 Only one component is protectable by copyright: the Shelley’s poetic descriptions, which are short yet substantive literary works.448 As a result, the Attribution-ShareAlike license technically governs only those descriptions.

The existential limitation of CC licenses to copyrightable works may seem devastating to its usability by perfumers, but it is not. While CC licenses amend perfumers’ copyrights, their trademark rights in branding or packaging, as well as publicity rights in marketing materials, are retained and can be used to protect perfumes from counterfeiting.449

The Open Source Smell Culture database also identifies all three P-22 perfumemakers by their names, an acknowledgment that not even Le Labo provided Voelkl. While the attribution aspect of the Attribution-ShareAlike license technically only applies to reuse or remix of perfumers’ fragrance descriptions, it can still address the pervasive erasure of noses’ contributions. Adopting an Attribution-ShareAlike license still signals that noses’ names should be known. Realistically, most aspiring perfumemakers will presume that the license applies to all parts of the perfumes and opt to provide attribution anyway.

446 U.S. COPYRIGHT OFFICE, CIRCULAR 33, WORKS NOT PROTECTED BY COPYRIGHT (2023) at 2.
449 See Carly Page, Perfume makers are fighting back against an illegal fake scent boom, WIRED (Nov. 23, 2020, 6:00 AM), https://www.wired.co.uk/article/fake-perfume [https://perma.cc/MRS3-5AXK].
Finally, and perhaps most importantly, publicly publishing sourcing and formulas addresses a wholly different form of IP protection: trade secrecy. Publication of those details frees fragrances from the IP most responsible for preventing aspiring perfumemakers from learning the craft. By waiving rights to trade secrecy, the P-22 perfumers provided a rich resource from which aspiring perfumemakers could sample, and they did so without needing the Attribution-ShareAlike or any other license. While the Attribution-ShareAlike license has more limitations than some perfumers might expect, it offers a less restrictive way to share perfumes while reflecting a commitment to crediting scents’ creators.

B. Advancing Open Certification

World Wide Web is an open source perfume that smells like walking through a carpeted data center with an open window overlooking Silicon Valley in the 90s. The scent opens with an initial hit of gasoline, which comes from a chemical called hexanol-3-cis. The note acts as a reminder that fossil fuels power the data centers that support the web. The gasoline is interrupted by bright bergamot, a nod to the disappearing citrus groves that used to pepper the Valley. A faint scent of wood paneling comes from cedar, inspired by the wood used to make telephone poles. And a warm, lingering musk rises from the trademark-protected iso e super. With only four ingredients, the scent is simple, both to make and to sample. It is also the first perfume certified by the Open Source Hardware Association (OSHWA).

OSHWA certification is not difficult. Perfumemakers disclose a moderate amount of personal information and document their perfume by sharing its name, a brief description, a website where it can be found, and a primary project type. “Perfume” is not a project type (yet), but there is an option for “wearables” and another for “arts,” both of which can be appropriated to describe fragrances.

Choosing a license provides an additional opportunity for perfumers to make their perfumes maximally available to aspiring perfumemakers.

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450 Id.
451 Id.
453 Id. I was invited to submit World Wide Web for evaluation by Michael Weinberg, a board member of OSHWA. Board Members, OPEN SOURCE HARDWARE ASS’N, https://www.oshwa.org/about/board-members/ [https://perma.cc/Z7N7-7KXT].
455 I’ve certified all three of my open source perfumes as wearables. TK.
OSHWA asks prospective certifiers to identify their hardware, software, and documentation licenses, only the latter of which applies to perfume. OSHWA defines twelve different licenses for documentation, six of which are CC licenses, including the Attribution-ShareAlike license favored by the P-22 open source perfumers. (“Other” is also an option.)

An alternative to the Attribution-ShareAlike license is CC0. CC0 is “no rights reserved,” effectively releasing perfumes into the public domain. While most formulas are not copyrightable, the Copyright Office has recognized an exception when “a recipe . . . creatively explains or depicts how or why to perform a particular activity . . . . A registration for a recipe may cover the written description or explanation of a process that appears in the work.” Perfumemakers seeking to make scents that are maximally free can draft descriptions that integrate formulas and sourcing so that the entire package is released from copyright protection. For perfumemakers who are willing to sacrifice credit—and some may not be—CC0 eliminates maximum friction from fragrance sampling.

OSHWA also offers an alternate, elegant way to connect open source perfumes. By identifying perfumes using the same project types, “wearables” as well as “arts,” “education,” and “other,” and using the same keywords “fragrance, perfume, scent,” certifying perfumers can ensure that their works will be cross-referenced with existing open source perfumes. New certifiers can then include citations to those existing open source perfumes, both OSHWA-certified or elsewhere, which generates a link back to those formulas.

Certifying open source perfumes through OSHWA also solves a different challenge for open source perfumes: infrastructure. Arguably, the most easily-findable database of open source perfumes is the one maintained by Open Source Scent Culture. It is useful but somewhat outdated, with the most recent scent being from 2019. While the database includes a promising tab for public domain formulas, like those

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456 Certify a Project, supra note 454.
457 Id. The other licenses are variations on GPL, the license pioneered by Richard Stallman. Id.
458 Certify a Project, supra note 454.
459 CC0, CREATIVE COMMONS, https://creativecommons.org/share-your-work/public-domain/cc0/ [https://perma.cc/T3GZ-VR68].
461 Id.; Certify a Project, supra note 454. It is the license I use for my open source perfumes. Open Source Perfume, supra note 452.
462
463 Certify a Project, supra note 454.
464 Institute for Art and Olfaction, supra note 390.
465 Id.
released using CC0, it is empty.466 Established and emerging perfumemakers may swap formulas on fragrance forums, but finding the right ones can be frustrating.467 By providing an intuitive, searchable certified projects list, OSHWA can operate as the centralized database for open source perfumes. World Wide Web, for example, is searchable by project type (wearable, arts, education) or keywords (fragrance, perfume, scent, Internet), making it discoverable by people who are seeking perfumes or simply searching for open source inspiration.468

CONCLUSION

Three millennia ago, a scribe recorded the recipe for the first documented perfume.469 The fragrance consisted of flowers, calamus root, cyperus, myrrh, balsam, and oil.470 Its nose was not a man from Grasse, but rather a Babylonian woman of color named Tapputi, who is widely regarded as the first professional perfumer.471 Even then, the nascent perfume industry was exclusionary. Only royalty could use certain scents.472 Rules evolved, and their variants extended well beyond the seventeenth century, by which time white Frenchmen and their sons had created a vast fragrance empire in Grasse.473 Today, due to the newest wave of exclusionary practices in Western perfumery, perfumers who look like Tapputi struggle to study and practice the art and technology of fragrance.

Perfume is for everybody. Which is why women, particularly women of color, have been working to democratize fragrance. Maiya

466 Id.


468 World Wide Web, supra note 25.


470 Id.


472 Id.

473 Beardsley, supra note 21.
Nicole Smith launched Black Girls Smell Good to create “a safe space to learn about fragrance without feeling like an outsider.” She shares her knowledge and passion with her 90,000 social media followers, some of whom are longtime fragrance lovers and others who are just getting started. She also makes space to highlight Black-owned perfumeries. Some of those wares are available at Kimberly Waters Black-owned perfume parlor in Harlem, the only one of its kind, where she operates six-week internships for young people interested in fragrance careers. Wilson-Brown has also been a leader in democratizing fragrance through her educational and experiential efforts with the Institute for Art and Olfaction.

This Article joins the endeavors of these and so many other perfume makers by challenging perfumers to address the vast legal and social inequities in the fragrance industry through freely releasing their formulas. Making perfume should be as accessible as another familiar art and technology, one that millions of amateurs embraced overnight during COVID-19: baking sourdough. Recipes were easily discoverable and freely available through centralized websites, YouTube, and cookbooks. Those recipes were more than lists of ingredients. Other bakers wrote recipes that shared technical details, like bake times, alongside intimate ones, like the first time someone baked bread with their partner after having a baby. People could identify ingredients easily and purchase them at nearby grocery and online specialty stores. While chemistry was involved, aspiring bakers who were not interested in the details didn’t need to understand it. After a couple misshapen loaves, people could put their own twists on sourdough.

This is not to say that trained bakers are not skilled, creative, and disciplined—they are, just as perfume makers are. But if baking

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474 Denton-Hurst, supra note 18.
475 Id.
476 Id.
477 Id.
479 See, e.g., Simply Recipes, YOUTUBE https://www.youtube.com/c/simplyrecipes; THE WORKS OF LIFE https://theworksoflife.com. To be clear, there are websites, YouTube channels, and books dedicated to perfumery, though they are not always accompanied by easy-to-follow recipes. See, e.g., Sam Macer, How To Make Perfume // Full perfumery course (2023), YOUTUBE https://www.youtube.com/watch?v=V-bWm2FnVk4; G.W. SEPTIMUS PIESSE, THE ART OF PERFUMERY, AND METHODS OF OBTAINING THE ODOURS OF PLANTS (1867).
480 The narrativization of recipes is likely strategic legally (or, more cynically, by providing more space for advertising and amplifying SEO), but it is often criticized colloquially. Byrne Hobart, Why Recipe Bloggers Make You Scroll So Far to Read the Recipe, ONE ZERO (Jan. 8, 2020), https://onezero.medium.com/war-peace-bacon-eggs-understanding-the-endless-recipe-site-preamble-a890b3c55ad.
sourdough were more like perfumery, Western bakeries would be largely led by French bakers who trained at the Parisian L’École Lenôtre. You would never know their names. Their pastries would tell the same stale stories. There would be no space for amateurs. And there would be limited opportunities for self-taught rookies to blossom into professionals.\footnote{1} During quarantine, many children helped their parents bake bread, but society rarely teaches children the perfumery skills of olfactory memory or aroma curiosity.\footnote{2} As McCartney lamented, “you can’t go to your local community center. You can do your yoga class, you can do your water aerobics. [Y]ou can do poetry, you can learn how to play the guitar, [but] nobody teaches anybody perfume.”\footnote{3} Without exposure to perfume making, aspiring perfume makers face challenges to getting started. Learning perfumery without sampling formulas is like attempting to bake sourdough without starter—impossible.

Patents and trade secrecy render materials and formulas inaccessible, and exclusionary practices have a parallel effect on the mainstream Western perfume industry. Yet, every year, self-taught and marginalized perfumers continue to find fragrances and share their stories with friends, customers, and fans. Producing open-source perfumes that are truly free—free to make, free to sample, and free from gatekeeping—can help democratize the industry by dismantling entrenched legal and social barriers that exclude aspiring perfume makers. Importantly, open-source perfume works in practice. Within weeks of World Wide Web’s release, aspiring perfume makers sampled the scent to create their own versions.\footnote{4} Open-source perfume ought to be the next free culture frontier, and this Article sought to chart a course toward the practice’s expansion. But its work is incomplete. Perfume is physical, and it deserves to be experienced. So, grab a scent strip, load it up, and take a sniff. You may find yourself inspired to sample something for yourself.


\footnote{2}{\textit{THE BIG BOOK OF PERFUME}, supra note 267.}

\footnote{3}{McCartney interview, supra note 12.}

\footnote{4}{See, e.g., @James_Carey, TWITTER (2023), https://twitter.com/James__Carey/status/1619399842354315264.}
This Article discusses the following fragrances, in order of appearance:

- Le Labo Santal 33 (Estée Lauder)
- Maison Louis Marie Bois de Balincourt*
- CAT Lab World Wide Web*
- Maison Francis Kurkdjian Baccarat Rouge 540 (LVMH)
- Sarah Jessica Parker Covet (Coty)
- La Boticá Nolita 96*
- Dolce & Gabbana Velvet Amber Sun (Shiseido)
- Chanel N° 5 Parfum*
- Chanel N° 5 Eau du Parfum*
- D.S. & Durga Pistachio*
- Viktor & Rolf Flowerbomb (L’Oréal)
- Frédéric Malle Musc Ravageur (Estée Lauder)
- Frédéric Malle Carnal Flower (Estée Lauder)
- Frédéric Malle Noir Epices (Estée Lauder)
- Frédéric Malle Rose Tonnerre (Estée Lauder)
- Zoologist Civet*
- Meleg Civet Cat Chypre*
- Pierre Armingeat Rève d’Or (defunct)
- Georges Darzens Floramyé (defunct)
- Yves Saint Laurent Black Opium (L’Oréal)
- Dossier Floral Aldehydes*
- Guerlain Shalimar (LVMH)
- Kimberly New York Ether*
- Shawn Crenshaw Ovation for Men*
- Yosh Omnistar*
- Guerlain Encens Mythique (LVMH)
- Guerlain Bois Mystérieux (LVMH)
- Shelley Ray P-22*
- Madeleine Stearns P-22*
- MR P-22*
- CAT Lab Search Engine*
- CAT Lab Touch Grass.*
- CAT Lab Buddy List*

Independent perfumes are annotated with an “*”. Noses for these perfumes are findable on websites like Fragrantica.