

DOING STS

MATHEW ARTHUR

# SMELLWORLDS

A CRITICAL DIY PERFUMING PRIMER

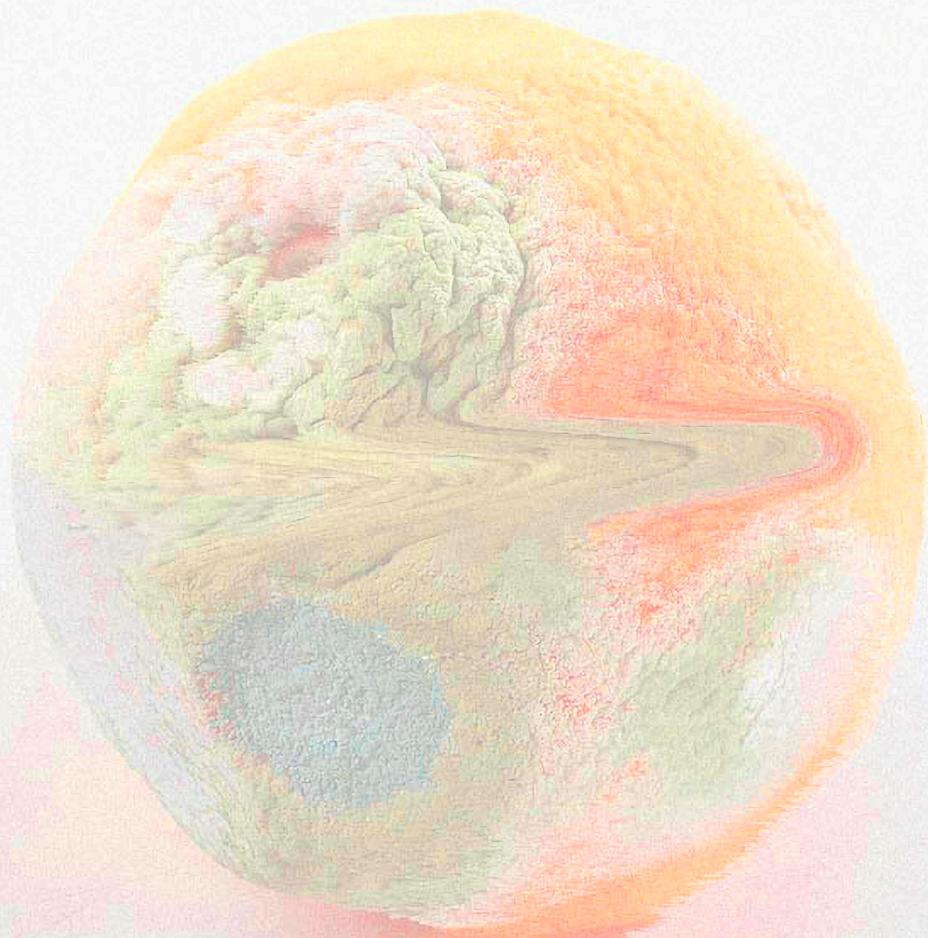
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## INTRODUCTION: MINOR SENSE

Smellworlds are everywhere. Intimate or atmospheric, sometimes imperceptible. They seep and linger. Scents are vibes: danger, sex, sickness, status, luxury, leisure, industry, death. They harness bodies into movement, luring or repelling. They are feral and highly regulated, tangled up in appetites and governance architectures. A lover's sweatshirt. An antiseptic hospital corridor. Gasoline. Bubble-gum. The censer clutched in a priest's smoke-shrouded hand. Rain on concrete. Old or new books. Sunscreen. Piss. We feel smell. It moves us. Yet olfaction is notoriously misunderstood. Over-associated with memory, it has been psychologized into stage or drive theories and biochemically diagrammed to abstraction. It exudes and eludes. Neuroevolutionary approaches propose that olfaction resources have shrunk in the neocortex over the ages. This makes smell a minor sense, ostensibly weak on post-perceptual processing. It *is* tricky to conjure an already-experienced or imaginary smell in the mind's "nose."<sup>1</sup> Chlorine and sweat. Wheatfields and asphalt. Alien terrain.

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1. Richard J. Stevenson and Tuki Attuquayefio, "Human Olfactory Consciousness and Cognition: Its Unusual Features may not Result from Unusual Functions but from Limited Neocortical Processing Resources," *Frontiers in Psychology* 4, no. 819 (2013).

Olfactory knowing and recall are at once familiar and ungraspable, chained to memory and proximity but synaesthetically filtered through taste, colour, analogy, or poetry. One only has to look to the perfumer to know scent's recursion—new smells always at the descriptive mercy of what is known. But despite scientific hyper-focus on cognition and language, smell does not submit to the neurotypical modest witness who disciplines his sense reactions in the moral, mood, and methodological hygienes proper to the production of evidence.<sup>2</sup> Roaming stench or surprise olfactory joy undermine the sovereign urge to quash sensory mutability, to engineer for intelligibility.<sup>3</sup> Even as theories of human olfaction rely on a stable sensory subject (the opposite of animality), the scientist's material exertions radically alter the sensorium: toxic or endocrine-disrupting smellsapes. Or, Covid-19 proliferates anosmia and other chemosensory effects.<sup>4</sup> But amidst ruin, its technoscientific fixes and viralities, smell's extravagance is nonsovereign.

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2. Donna J. Haraway, *Modest\_Witness@Second\_Millennium.FemaleMan\_Meets\_OncoMouseTM: Feminism and Technoscience* (New York: Routledge, 1997).

3. For example Lauren Berlant, *Cruel Optimism* (Durham: Duke University Press, 2012), 52–53.

4. See Michael Marshall, "Covid and Smell Loss: Answers Begin to Emerge," *Nature* 606 (2022): 631–632.

It favours distributed subjectivity. It congeals more-than-human kinships. Smell is learned *in utero* via amniotic fluid. To smell is to ingest another's chemical production. Rats smell in stereo—each nostril a world.<sup>5</sup>

The initiating proposition of smellworlds is compositional: that scent (or its absence) assembles, pulling things into consistency. Smell's regionality "jumps between landscape and bodies of all kinds."<sup>6</sup> To smell is to imbibe or diffuse place—its matters and multiple histories, technicities, vulnerabilities, and violences. Scent infrastructures gain texture around questions of subjectivity and animality, civility and odour, design and desire, utility and glitch. They register invisible and non-consensual chemical relations while defying Western-scientific ways of knowing.<sup>7</sup> It is no surprise that imperial histories are tales of deodorization. What smells good is as much about pleasure as it is a bodily pedagogy of good-life fantasies.

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5. Aimee Fountain, "Lingering Questions About Human Smell," *Lumosity* (2020), <https://www.lumosity.com/en/blog/lingering-questions-about-human-smell>.

6. Kathleen Stewart, "Regionality," *Geographical Review* 103, no. 2 (2013), 275.

7. Mathew Arthur and Coleman Nye, "Scenting Relations: Exploring Smell-Worlds through Zine-Making," Society for Social Studies of Science (4S) Annual Meeting, University of Toronto (2020).

The colonial project is a toning of sense: how anthropocentrism, whiteness, and settler nationalism come with cultivated habits of smell and predictable smellscapes. New car. The spa. Smog. Respectabilities of body odour. The acidity of paper money. Electrical fire. Laundry. Rubber.

Critical engagements with smell are many and few. The literature homes in on cultural histories, neurophysiology, sensory mapping or smellwalk methods, and notions of toxicity and risk. Instead, I propose DIY perfumery as a way into the worldly atmospherics of smell—how smell connects and moves. Bodily, emotionally, wafting here and there. DIY perfumery rehearses questions of material purity and provenance, identification and classification, harvest and extraction, replicability and trade, temperature, duration, toxicity, and mood. While industrial histories of perfuming map onto spice and slave trade routes and repeat the extractive impetus of sciences, DIY practice slows down to forage, tincture, and age. The amateur perfumer attunes to seasons or yields and rests with the unruliness of care and growth. A tincture can take years. Enfleurage wrestles volatility with a tedium of hand-plucked petals. Steam distillation presences the fraught ratio between input and output—all from the kitchen's hearth. Playing with synthetic aroma chemicals is a training in the overlap of lab-grown purities and the

plantation yields required to produce what counts as “natural.” DIY perfuming practices ethical unknowabilities and patterns durational relationships with microbes, molecules, plants, animals, and elements. It orchestrates its practitioner as an ecology of experimental practice,<sup>8</sup> feels out “forces of composition,”<sup>9</sup> and dramatizes habits of care. What follows is a series of scores for doing it yourself: to play with, remix, or fail at. Practices to notice and care with. A try at smelling out otherwise worlds.

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8. A non-neutral “tool for thinking through what is happening” or a “science of matter, which, rather than being anchored in a given institution, position, network or subjectivity, creates alternative conditions of existence.” See Isabelle Stengers, “Introductory Notes on an Ecology of Practices,” *Cultural Studies Review* 11, no. 1 (2005), 185; Dmitris Papadopolous, “Alter-Ontologies: Towards a Constituent Politics in Technoscience,” *Social Studies of Science* 41, no. 2 (2011), 195.

9. Erin Manning, “Creative Propositions for Thought in Motion,” *Inflexions* 1, no. 1 (2018), 22.



## TINCTURING

Tinctures like cocktail bitters or amber-bottled herbal apothecary fare are commonplace. Perfume materials can be tinctured in the same way—medicinal and scented volatile compounds soluble in alcohol or oil. Organic matter is covered with grain alcohol or a neutral oil in a glass jar, shaken occasionally, and left to soak for months or even years. From weeds, moss, seaweed, and honeycomb to dirt, earwax, human hair, or pencil shavings, anything can be tinctured: foliage, petals, seeds, bark, resins, roots, rhizomes, rinds, spores. Botanical matter contains sugar and starches that act as a fixative, trapping scent molecules and slowing evaporation. The simplest method of tincturing is maceration. Materials are chopped, crushed, or powdered and covered with solvent, aged, and eventually strained. A percolation tincture is similar to brewing coffee: materials are packed into a cone and solvent is dripped through.

## YOU WILL NEED

Fresh or dried aromatic materials

A Mason jar or other glass container

Grain alcohol, vodka, or rum (80 to 190 proof)

Cheesecloth or a coffee filter

## HOW TO

Use the highest proof alcohol available—Everclear, for example. 151 proof rum can be run through a Brita filter to reduce its scent. 80% ethanol hand sanitizer without additives (traces of peroxide or glycerine are fine) can be used. While it is possible to make medicinal tinctures with oil, they are unsuitable for use in alcohol-based spray perfumes. Pack a glass container halfway with aromatic materials and fill the remaining space with alcohol. Dried materials will expand as they absorb the solvent. Cover with a non-plastic lid. Agitate daily or at least weekly. Make sure to keep materials fully submerged so they do not mould. Highly volatile scent compounds will extract in a matter of days; less-volatile compounds might take several months. Some less-fragrant botanicals may need to be strained out and replaced occasionally. Eventually the alcohol will reach its saturation point. Sample at various stages using paper strips. Strain through cheesecloth or a coffee filter and remove spent material.

## IDEAS

Bee propolis, clay, tarragon, tomato leaves, sap, pine needles, tea leaves, coffee grounds, tonka beans, ginger, moss, cardamom

## ENFLEURAGE

Some materials are too delicate for tincture or distillation. After harvest, for example, jasmine flowers continue to produce volatile oils that are destroyed by harsh solvents or heat. While commercial absolute extraction uses hexane and other hydrocarbons or supercritical CO<sub>2</sub>, moody florals like jasmine, tuberose, or lilac can be captured via enfleurage. Newly opened and fragrant flowers are picked, separated from their calyxes, and layed on a tray of *menstruum* like lard, shea butter, or other fat (19th-century French perfumeries used tallow). The fat captures volatile scent compounds. Daily, the spent flowers must be replaced with fresh material. This process is repeated up to 30 times to create a scented fat or *pommade* which can then tinctured in alcohol—and the fat eventually strained out.

## YOU WILL NEED

Fresh aromatic materials

Fat like coconut oil, Crisco, or shea butter

A glass tray or baking dish

A Mason jar or other glass container

Grain alcohol, vodka, or rum (80 to 190 proof)

## HOW TO

Prepare a glass tray with a thin layer of fat (around 1" maximum). Use a fat that is solid at room temperature. Gather fresh flowers or leaves and place face-down in a single layer on the fat. Each day, remove the old flowers and replace with fresh material. The number of "recharges" needed varies wildly by plant. Generally, at least a dozen repetitions will be required to capture any meaningful scent. When the fat is loaded with scent, remove the remaining plant matter and transfer the fat to a glass jar. Cover with high-proof alcohol. The scent compounds are soluble in alcohol and will transfer from the fat over time, leaving it unscented. To strain off the fat, place the jar in the freezer to form a solid disc that can be lifted off the alcohol tincture.

## IDEAS

Lilac, tansy weed, a storebought bouquet, marigold, geranium, jasmine, mimosa, acacia, hyacinth, violet, gardenia, linden, peony, magnolia, lily of the valley, tulip, blue bells, black walnut, shiitake mushroom, pineapple weed buds, currant, soapberry





## ENFUMAGE

Enfumage is a neologism for the process of tincturing smoke. Incense or plant matter burned over charcoal is captured in an upside-down bowl covered in fat. This process can be repeated to load the fat with scent compounds. The fat is then tinctured in alcohol. The resulting tincture may be carcinogenic.

### YOU WILL NEED

Dried aromatic materials

A self-igniting charcoal disc

A large glass or metal bowl

Coconut oil or lard

A Ziploc bag of ice cubes

A Mason jar or other glass container

Grain alcohol, vodka, or rum (80 to 190 proof)

## HOW TO

Coat the bowl in a thin layer of fat. Use a fat that is solid at room temperature. Ignite the charcoal disk and cover with loose incense, woodchips, conifer needles, or other dried plant matter. Cover with the (inverted) bowl. Place a bag of ice on top to prevent the fat from melting. Check occasionally and add more material or replace ice. When done, place the bowl right-side up in warm water to melt the fat. Pour fat into a glass jar and cover with high-proof alcohol. To strain off the fat, place the jar in the freezer to form a solid disc that can be lifted off the alcohol tincture.

## IDEAS

Trappist incense, cedar shavings, sawdust, sage, palo santo, sichuan peppercorns, black cardamom pods, Christmas tree needles, black tea, piñon resin, frankincense, brown sugar, juniper berries, beeswax, oat straw, sweetgrass

## DISTILLATION

Steam distillation is used to extract essential oils from organics and to distill alcohol (from wine, cider, mead, or fermented mash). The still's column is packed with material. Boiling water in a chamber below directs steam upward, passing through the material to release essential oil molecules. The steam and oil are pushed through to a coil or cooling unit where they condense and empty into a collection vessel. Distillate contains mostly water—called hydrolat, hydrosol, or flower water. It yields a small amount of essential oil. Oil is separated off using a pipette, separatory funnel, or Florentine separator. Hydrosol can also be made without a still. Pack material into a large stockpot with a heat-safe bowl or tin can placed in the bottom. Cover material with water below the level of the centre bowl. Put the lid on upside-down and fill with ice. As the pot simmers, the inverted, cooled lid will direct condensation downward into the bowl.

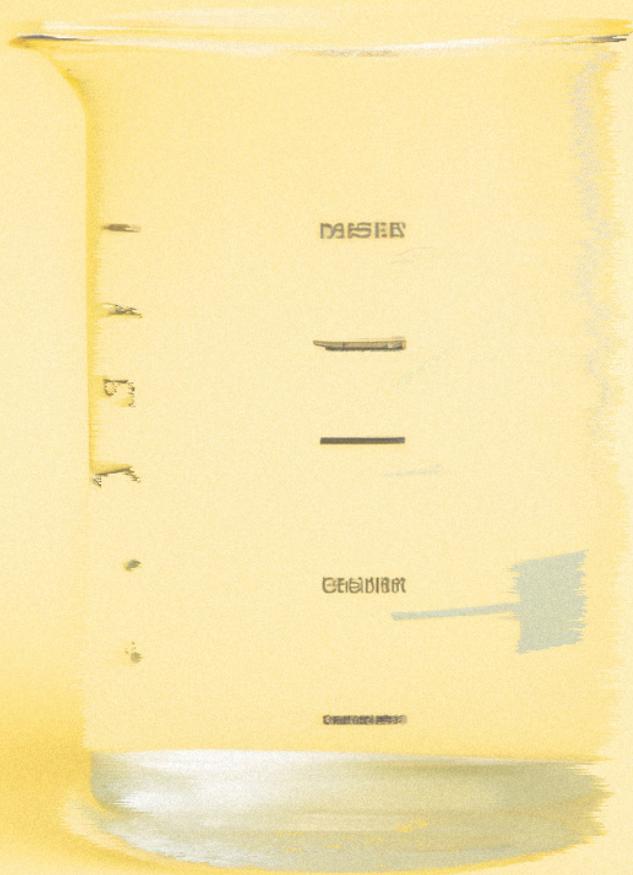
### YOU WILL NEED

- Fresh or dried aromatic materials
- A copper alembic still
- A low-flow aquarium pump or ice
- Clear vinyl tubing
- A plastic tub or bucket
- Graduated cylinder or glass jar
- Pipette or separatory funnel

## HOW TO

A copper alembic still has four components: a pot for boiling water, a column which sits on top of the pot and holds materials, a cap covering the column to direct vapour down the condenser coil, and the coil unit itself. An additional tube may be included that sits between the cap and the coil. First, fill the still's pot with water. Leave an inch of headroom. Pack the column loosely with materials. Do not use powdered material—the cap can clog and cause an explosion. Connect vinyl tubing to the bottom spout on the back of the condenser coil. Affix the other end to the outflow of the aquarium pump which is to be placed in a large tub or bucket filled with cold water. The pump will push water up through the bottom of the condenser and overflow from the second spout above. Instead of a pump, you can manually feed ice or cold water into the condenser—but must do so continuously during distillation. Connect another piece of tubing to the top spout with the free end draining into the tub. Finally, place a glass collection vessel below the outflow spout on the coil unit. Teflon can be used to further seal the joints between components. Now, bring the pot to a boil and watch for the distillate. Monitor closely to ensure the still does not clog or run out of water. Separate the oil from the hydrosol using a pipette or separatory funnel. The oil can be used in any oil or alcohol-based perfume formula. Hydrosol is used alone and should be refrigerated.





## SYNTHETICS

Synthetics are lab-engineered single molecules. Some are natural isolates extracted from plants or animals. Most are made from hydrogen, oxygen, nitrogen, and sulfur obtained from petroleum using heat or enzymes. Aroma chemicals are engineered for stability, both in terms of replicable perfume formulae and in ensuring a global fragrance supply chain unaffected by crop variations. Most synthetics are characteristic of a specific odor. Rhubofix smells like rhubarb. Benzyl Cinnamate smells like cinnamon. Synthetics are classed by chemical structure and generally share similar organoleptic or sense-experience properties. Alcohols smell green, herbaceous, or minty. Cis-3-Hexen-1-ol, for example, conjures fresh cut grass. Esters are fruity. Terpenes range from citrusy to woody—even spicy. Aldehydes are soapy, waxy, and ozonic. Ketones are musky and animalic: Oct-1-en-3-one smells like blood and mushrooms, 2-Acetyl-1-pyrroline like yeast or jasmine rice. Lactones are milky, ranging from butter to coconut or apricot. A commercial perfume formula might use dozens of synthetics in varying and trace amounts (see p. 26). Synthetics must be handled carefully. They can cause rashes,

migraine headaches, and respiratory problems. Smell in dilution or on paper strips. Synthetics alongside naturals are mixed with alcohol to create perfume, see “Formulation” below.

The IFRA Standards Library lists regulated materials with details about toxicity, allergy, and sensitivity:

<https://ifrafragrance.org/safe-use/library>

Synthetics can be ordered from:

<https://shop.perfumersapprentice.com>

<https://pellwall.com>

## FORMULATION

A perfume consists of a concentrate of synthetics and naturals diluted in high-proof alcohol. The ratio of total materials to alcohol determines the type of perfume. A 20–40% concentration of materials is a Parfum, 15–20% an Eau de Parfum, and 5–15% an Eau de Toilette. Eau de Cologne and Eau Fraîche are even smaller concentrations. A perfume can include dozens, even hundreds of notes. “Note” refers to both the identifiable scents in a perfume and to the scent produced by a single aromatic material. But not all

scents can be replicated using a single material. Multiple naturals and synthetics are built into accords: multiple notes combined. Aroma notes are often categorized as top, middle, and bass (see p. 25), which refers to volatility or how quickly an aroma dissipates.

## YOU WILL NEED

Natural and synthetic aromatic materials  
Perfumer's or other high-proof alcohol  
Pipettes and paper test strips  
A 0.01g precision digital scale  
Glass vessels for mixing

## HOW TO

Use either a scale or pipettes to measure out your formula components in grams or drops. A scale is only important if you wish to reproduce your scent. Check <http://www.thegoodscentcompany.com> for note descriptions for each material, IFRA safe use limits, and lists of potential blenders. Once you have mixed your concentration, leave it to age and blend or add it immediately to alcohol using a concentration percentage (from the "Formulation" section above). Be cautious

with ethanol, it is highly flammable. Shake and test with paper strips. Perfumes change drastically over time, and many need months to age. If you have used resins or other naturals, you will need to filter your final product.

## FILTRATION

Perfumes made with naturals can sometimes be sticky or stain clothes. Filter use a micron filter, coffee filter, or a pinch of diatomaceous earth in the tip of a paper filter. Like brewing, perfumes can be “cold-crashed.” This entails putting the solution in the freezer overnight. Oils and contaminants will solidify and can then be more easily filtered out using any method above.

## RESOURCES

Smellworlds Database

<http://doingsts.com/smellworlds>

Institute for Art and Olfaction

<https://artandolfaction.com>

Open Source Smell Culture

<https://opensourcescent.org>

The Good Scents Company Information System

<http://www.thegoodscentcompany.com/search2.html>

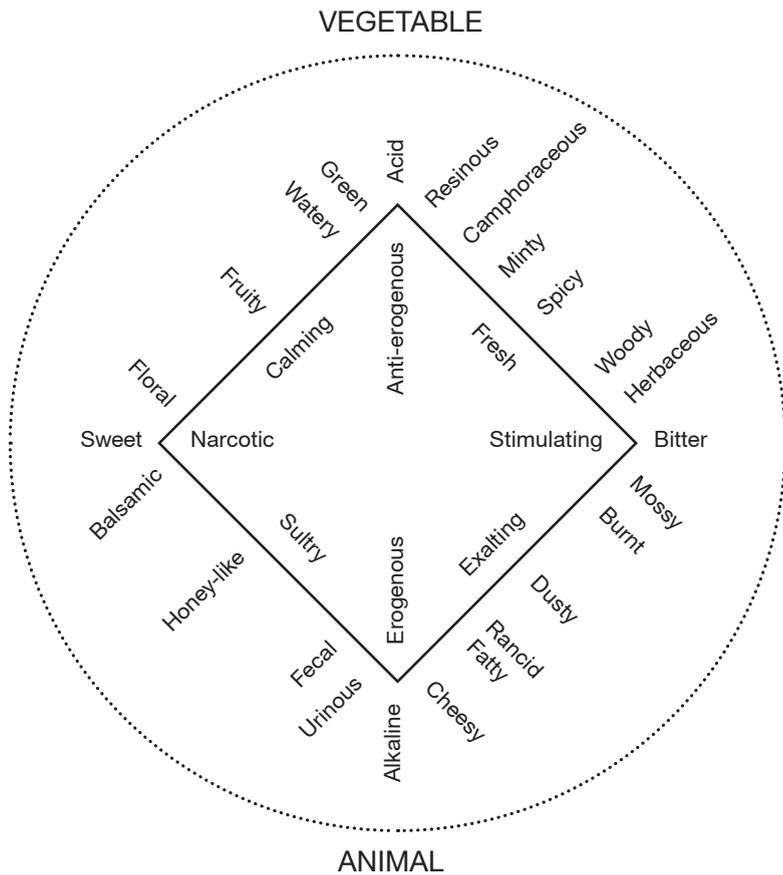
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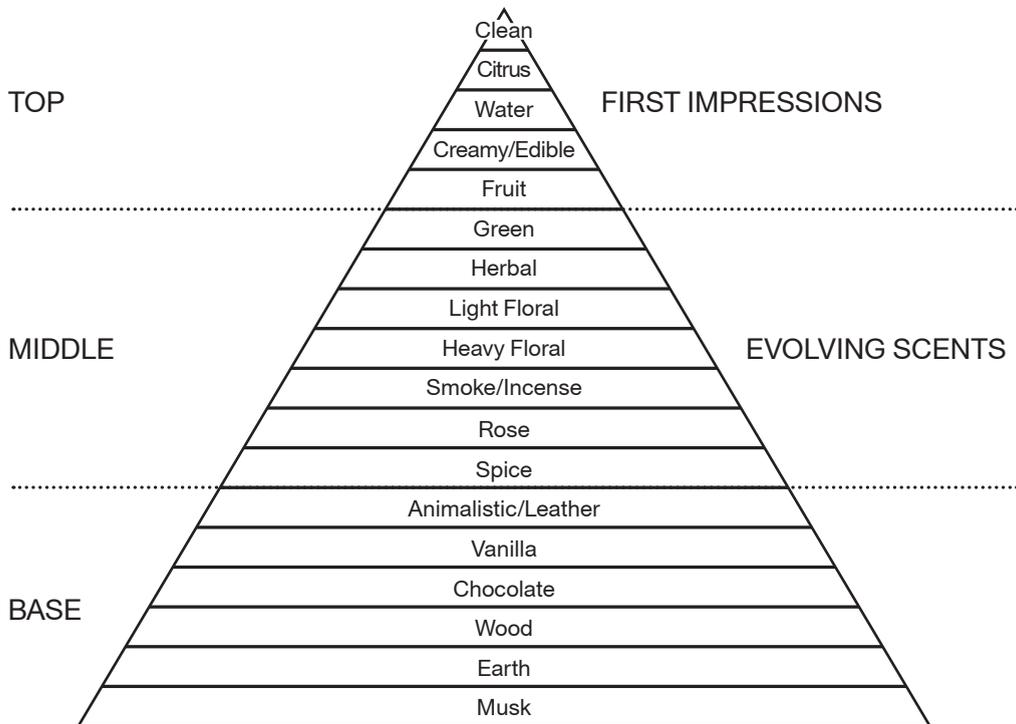
<https://smellandthecity.wordpress.com>

Sensory Mapping

<http://sensorymaps.blogspot.com>

Stephan Jellinek and Robert Calkin, "Odor Effects," in *The Psychological Basis of Perfumery* (London: Chapman & Hall, 1997).





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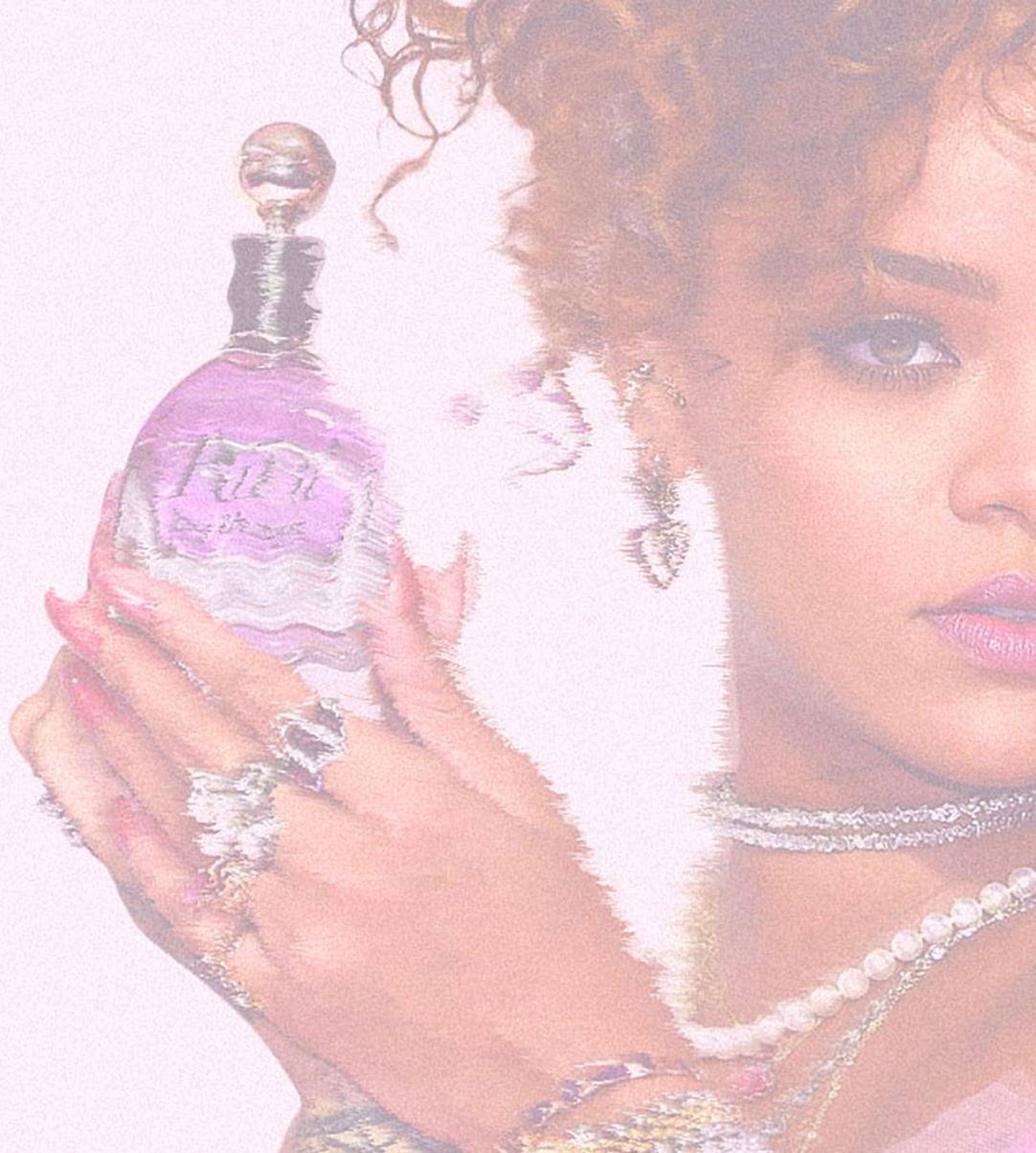
Hedione 30%  
Galaxolide 10-20% muscone  
Linalyl acetate 5-10%  
Linalool 5-10%  
Bergamot oil 5-10%  
Dihydro myrcenol 5-10%  
Iso e super 5-10%  
Diethylphtalate (solvent) 1-5%  
Helional (IFF) 1-5%  
Isopropylmyristate (solvent) 1-5%  
Tonalide (Fixolide) (Givaudan, PFW) 1-5%  
Lime oil cold pressed 1-5%  
Bergamot oil FCF 1-5%  
Dipropylenglycol (solvent) 1-5%  
Ionone beta 1-5%  
Cis-jasmone 10% DPG 1-5%  
Phenylethyl alcohol 1-5%  
Lilial 1-5%  
Lemon oil Itali 1-5%  
Guajakwood oil 0.1-1%  
Sandalwood 0.1-1%  
Cis 3 Hexenyl salicyclate 0.1-1%  
1-terpinen-4-ol 10% DPG 0.1-1%  
Mandarin oil red 0.1-1%  
Majalon (Magnolan) 10% DPG 0.1-1%  
Clary Sage oil 0.1-1%  
Peppermint oil 10% DPG 0.1-1%  
Lemon oil ultra 0.1-1%  
Ambroxan 0.1-1%  
Coumarin 0.1-1%  
Scentenal (Firmenich) 10% DPG 0.1-1%

Indole 10% DPG 0.1-1%  
Geraniol ultra 0.1-1%  
Cardamom oil 0.1-1%  
Iso jasmone 10% DPG 0.1-1%  
cis 3 Hexenyl acetate 10% DPG 0.1-1%  
Evernyl 10% DPG 0.1-1%  
Camphor synth. 10% DPG 0.1-1%  
Ethyl vanillin 0.1-1%  
Galbanum oxyacetate (Cyclogalbaniff) 0.1-1%  
Benzyl acetate ultra 0.1-1%  
Jasmine India max. abs. 0.1-1%  
Ambrettolide 0.1-1%  
Berberis-base 109.856 (?) 0.1-1%  
Rose oil Turckisch 0.1-1%  
Lavender oil barremer 50/52% 0.1-1%  
Coriander oil 0.1-1%  
Boronia abs. 0.1-1%  
Aldehyde C-14 0.1-1%  
Floralozone (IFF) 0.1-1%  
Ginger oil co2 0.1-1%  
Dewfruit base (Quest) 0.1-1%  
Terpineol alpha 0.1-1%  
Neryl acetate 0.1-1%  
Geranyl acetate 0.1-1%  
Animalid (Polarome) 0.1-1%  
Liffarome (Vertelione) (IFF/Grau) 0.1-1%  
Allyl ionone 0.1-1%  
Allyl amyl glycolate 0.1-1%  
cis 3 Hexenol 0.1-1%



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one

Calvin Klein



## READING LIST

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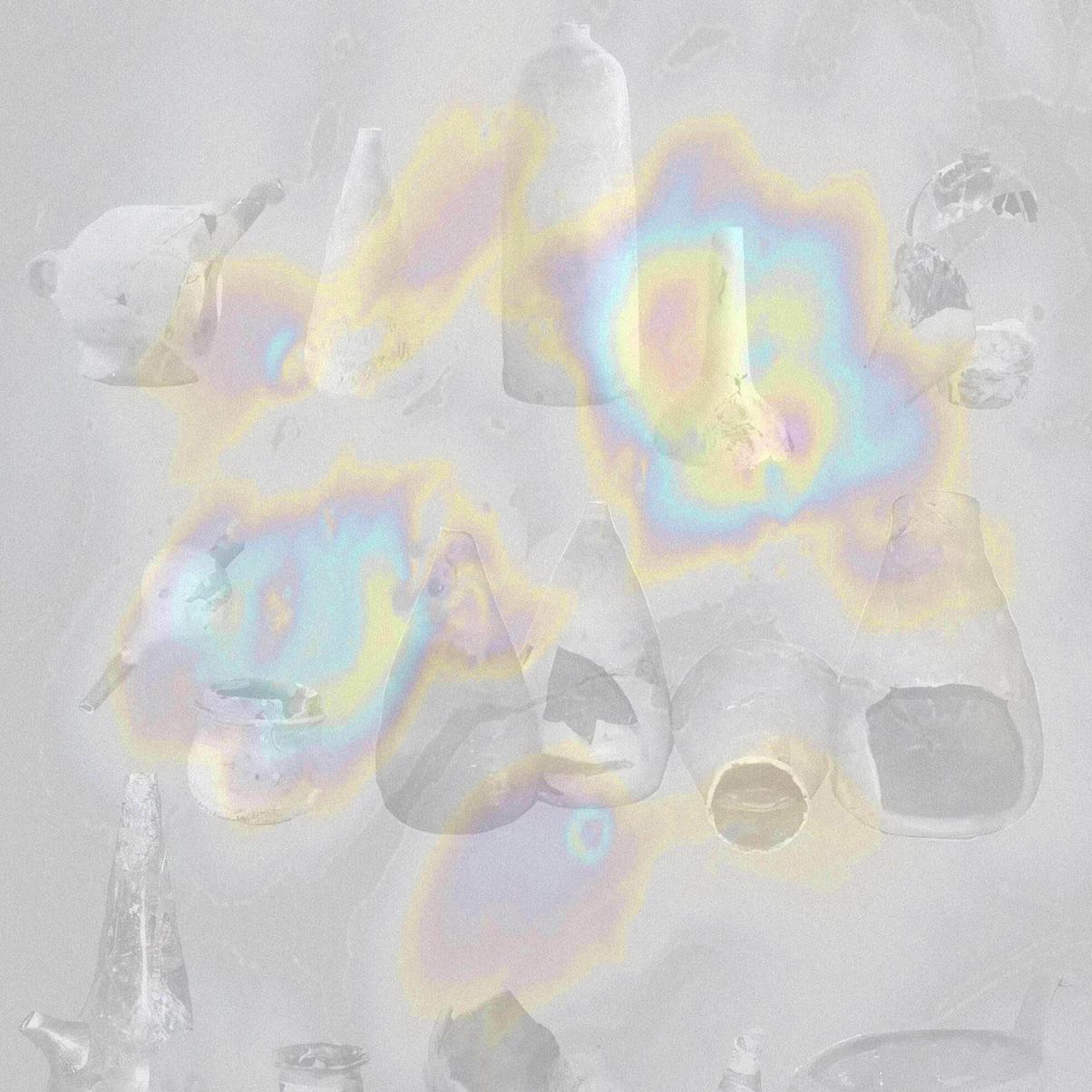
*Felis Libethyi*  
Bismarckgebirge.



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## SMELL METHODS

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ARMPITS, AXE BODY SPRAY, BENZOIN, BLOOD, CHERRY BLOSSOMS, CHLORINE, CHRYSANTHEMUM, CHURCH BASEMENT, CILANTRO, CK ONE, CLOVE, COPAL, COUGH SYRUP, CUCUMBER, DARK RUM, DEW, DRUM TOBACCO, DRYER SHEET, EAR WAX, ELECTRICAL FIRE, FERN, ERASER, FALLING SNOW, FIR SAP, FRESH-BREWED COFFEE, FUZZY PEACHES, GRAPEFRUIT RIND, GRASS, GYMNASIUM, HAY, HOSPITAL, HOT GARBAGE, INSTANT RAMEN, JAPANESE CYPRESS, JHAPA, KETCHUP CHIPS, LATEX, LAVENDAR, LAWNMOWER, LEATHER, LEMONADE, LILAC, LINSEED-OILED TEAK, LOCKER ROOM, LYSOL, MANDARIN ORANGE PEEL, MARIGOLD, METAL, MOLASSES, MONEY, MOTHBALL, MOTOR OIL, MR. CLEAN, NAG CHAMPA, NAIL POLISH, NESTEA, NEW CAR, OLD BOOKS, OLD SPICE, ORANGE CRUSH, OUD, OZONE, PAINT THINNER, PALO SANTO, PENCIL SHAVINGS, PETRICHOR, PHEREMONE, PICKLE, PLASTIC, POLLEN, PRECIOUS WOOD, RAIN-SOAKED EARTH, RED BUSH TEA, RHUBARB, ROOT-BEER, ROTTING LEAVES, RUBBER, RUST, SALTWATER, SAWDUST,

SEMEN, SHIT, SMOKE, SMUDGE, SOURDOUGH STARTER, SOUR MILK, SPARKLERS, SPICE, SUEDE, SULPHUR, SUNSCREEN, SWEAT, SWEETGRASS, TAR, TREE MOSS, URINE, VICKS VAPORUB, WET DOG, WET PAINT, WILDFIRE, YEAST.

