What We Talk About When We Talk About Smells: A Corpus Study of the Language of Olfaction

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Abstract

One of the fundamental uses of language is that it allows us to communicate the things we perceive with our senses. While most of the senses have dedicated vocabulary which speakers can draw on to describe their experiences—visual colour terms, taste terms like *sour*, words to do with hearing like *loud* or texture like *rough*—the sense of smell is less lexically well served, in English at least.

In light of this paucity of dedicated vocabulary, this thesis seeks to find which words and linguistic strategies English speakers use when they wish to put complex olfactory experiences into words. It accomplishes this through the investigation of a purpose-built corpus of fragrance reviews taken from the perfume community website Fragrantica. It first establishes the key semantic domains of the corpus, before providing a corpus-driven analysis of the language of olfaction around each of these key domains. This analysis begins with those domains most semantically distant from the sense of smell (like TIME), then moves towards the senses in semantic space with an analysis of words to do with the linked domains of FOOD and PLANTS, before offering an analysis of directly sensory words themselves. Finally, it deals with more complex olfactive descriptions which use aspects of character and setting to communicate olfactory information.

Through investigating the semantics of olfactive language in this corpus-driven way, this thesis presents three main conclusions. First, it argues that when source-based descriptors are employed in olfactory description, non-olfactory components of those descriptors also play a role in generating olfactive meaning. Second, that a primary strategy for communicating olfactive meaning is through connotation and association rather than direct sensory description. And third, that when words from non-olfactory sensory domains are used to communicate olfactive meaning, this cross-modal use does not represent a metaphoric transfer of meaning, but rather indicates that the semantic domains of the senses are so closely and densely linked that they can be considered a contiguous domain of perception.

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Chapter 1

Introduction

One of the most fundamental uses of language is to communicate the things we experience with our senses. It is common conversation to talk about the colour of the sky, the sound of an album, the texture of some fabric, the flavour of a piece of fruit, or the smell of a perfume. But not all of our sensory experiences are equally easy to communicate with words: in English, it is generally more difficult to describe the things we smell than the things we see, hear, taste or touch. The sky could be described with any number of words to do specifically with vision (*blue*, *grey*, *bright*), the music might be *loud* or *melodic*, the fabric *smooth* or *soft*, the fruit *sweet*, *tart* or *bitter*. But how would one describe the smell of the perfume? We might describe it as *floral*, but this is a comparison to something in the world—flowers— rather than a sensory-specific, abstract descriptive term like *loud* or *sweet*. We might use *sweet* to describe the smell of the perfume, but this is a term more associated with the sense of taste than of smell, rather than a dedicated piece of olfactive vocabulary. Compared to the other senses, English speakers have much less dedicated descriptive vocabulary to draw upon when we want to describe the things we experience with our sense of olfaction. The central question this thesis asks is that, in light of this lack of specific vocabulary to do with smell, when English speakers wish to describe complex olfactory experiences, what words and linguistic strategies do they use to verbalise those experiences?

This main question, which will be investigated in depth across the following chapters, is accompanied by two sub-questions. As well as asking which words and strategies are used to describe olfactory experience, this thesis asks from which semantic domains do these descriptive words originate, and by what semantic processes is their use motivated? Additionally, when words typically associated with other senses are used to describe olfactory

experiences (like describing the perfume as *sweet*), to what extent can this be termed a metaphoric transfer of meaning?

These questions are firmly within the domain of sensory linguistics, which is by its nature a strongly interdisciplinary field incorporating many different approaches. The dominant approach taken by this thesis methodologically and analytically is from the perspective of corpus linguistics. By using a corpus-driven methodology, this thesis is able to answer these questions using large-scale, real-world language data and consequently offer conclusions which are firmly rooted in how language is actually utilised. While corpus linguistics is the main approach, the interdisciplinary nature of the field of sensory studies means that in places some discussion and analysis this thesis also takes approaches from (and makes contribution to) the fields of metaphor studies and cognitive semantics, and utilises more macroscopic analysis broadly rooted in discourse analysis in Chapter 7.

This thesis seeks to provide some answers to the above questions through a thorough interrogation of a corpus comprised almost entirely of olfactive language. In the following chapters, I interrogate a purpose-built corpus of consumer fragrance reviews in order to answer these questions. By using this particular corpus, it is possible to build a picture of how olfactory experiences are verbalised in real-world language where the communication of smell is a primary communicative goal. The dataset which underpins the research in this thesis consists of 2.4 million words of perfume reviews collected from the fragrance community website Fragrantica, a forum and fragrance encyclopedia where users can post reviews of over a hundred thousand indexed fragrances with varying degrees of descriptive analysis and complexity. All linguistic examples from the corpus presented throughout this thesis are drawn from the reviews which comprise this corpus. Four full reviews are reproduced here to give the reader a taste of what the reviews are like as a whole, and the stylistic range which is represented in the corpus. The reviews given below are typical of those contained in the corpus, although those like Review 1, which offers a relatively simple sensory comparison to real-world referents like raspberries and powdered sugar, are more frequent than the more imaginative examples represented by Review 4.

(1) Beautiful everyday kind of fragrance! Smells like raspberries and powdered sugar to me with maybe just a hint of floral. Very pretty and feminine, safe blind buy if you like fruity sweet perfumes

(2) A bitter, pithy, underripe fruit coated with a light sprinkle of salt and chili powder. No sweetness to be had here. It's so nice that this scent is linear! Salted Green Mango doesn't lose its tartness on the dry-down and remains a fragrance with a little bite all the way through its wear. Perfect for warm weather if you want something a little different. This is the longest-lasting green fragrance I've tried so far. Well done.

(3) Imagine a 1920s Geisha doing a fan dance in a Japanese garden. The fans waft the scents of greenery, vintage silk and talcum powder among the floral bouquet of the garden. At once exotic and familiar,, comforting and brusque. Smells also like vintage Guerlain. Sillage is beautiful, and very powerful - a little goes a long way.

(4) It's very cold fragrance. Feels like a cold shoulder to me for some reason. Imagine going to a peninsula hotel in nyc, you go to the bathroom to wash your hands. This woman with dark hair wearing a white crop fur coat is washing her hands with an emotionless face. She looks like she's not interested in anything including herself. That's the vibe I get. Nothing sophisticated about this fragrance and too cold for my taste.

Review 1, a review of Ariana Grande's fragrance *Ari*, is a stylistically and descriptively straightforward description of the fragrance which describes its main olfactive components and offers a brief evaluation. Review 2 takes a similar approach, directly describing the fragrance (Strangers Parfumerie's *Salted Green Mango*) but in somewhat more technical and analytical terms. Review 3, describing Guerlain's *Mitsouko* eau de parfum, takes a different descriptive approach, painting a scene which they might associate with the sensory experience of the fragrance, while including specific olfactive vocabulary by specifying certain fragrance components like *greenery* and the *floral bouquet*. Review 4 takes an interesting approach, where the reviewer describes Narciso Rodriguez's *Narciso* not in terms of its olfactory components at all, but rather offers an impressionistic description of its 'vibe' mainly through a description of an imagined character. As can be seen from these four examples, the nature of the reviews in the corpus and the descriptive strategies used by reviewers vary. Nonetheless, all reviews share a common goal: to provide a description, sometimes evaluative, of something which the reviewer has experienced through their sense of olfaction.

In the following chapters, linguistic examples are taken directly from the corpus and reproduced with their immediate meaningful context, rather than as KWIC-style concordance lines. Providing a fuller, more immediately understandable context for the review in question in this way allows for a clearer and more informed analysis with better access to

the reviewer's intended meaning. Misspellings and linguistic idiosyncrasies are left as the reviewer wrote them in all instances, except where this may create confusion or ambiguity, in which case clarifying edits have been made within square brackets. Contextual or explanatory information is also given in footnotes for some reviews where this is beneficial, for example in places where the reviewer makes potentially opaque references to certain perfumes or fragrance houses. For clarity, I have emboldened search keywords in the examples given throughout this thesis. Due to the technical limitations of the tools used to extract review material from the webpages, word-level formatting was not extracted from the reviews as they appeared on the Fragrantica site and any formatting is my own.

This thesis is structured so that each chapter deals with a specific semantic domain which is important to the language of the corpus, arranged so that the analysis begins with those domains most semantically distant from the sense of olfaction, and moves towards an analysis of language from specifically sensory domains. Chapter 3 explains fully the reasoning behind presenting the research in this way, and also explains the methodology I have adopted, explaining the corpus and the process of its compilation and tagging in detail. The first main analytical chapter of the thesis, Chapter 4, begins with an analysis of language within non-sensory domains, like CLEANING and ANATOMY, which occur frequently in the corpus but which are most semantically distant from olfaction. Then, Chapter 5 moves closer to the domain of the senses with a discussion of the language in the corpus which centres around the linked and overlapping domains of FOOD and PLANTS. Chapter 6 then discusses language to do with the domains of the senses themselves, and how words from other sensory modalities, especially taste, are used to describe olfactory experiences. Chapter 7, taking a slightly different methodological approach, analyses a different communicative strategy where reviewers include narrative-like elements, character and place, in their reviews, like the imagined cold woman in review 4 above.

Throughout these chapters, I will argue that the linguistic evidence from the corpus suggests three main things about how olfactive meaning is communicated linguistically. First, that when source-based descriptors are employed in olfactory description (like the *raspberries and powdered sugar* in Review 1), non-olfactory components of those descriptors also play a role in generating olfactive meaning. Second, that a primary strategy for communicating olfactive meaning is through connotation and association rather than direct sensory description. And third, that when words from non-olfactory sensory domains (like *sweet*) are used to

communicate olfactive meaning, this cross-modal use does not represent a metaphoric transfer of meaning, but rather indicates that the semantic domains of the senses are so closely and densely linked in a cognitive sense that they can be considered generally to be a contiguous domain of perception.

Following the present introductory chapter, in Chapter 2 I will now review the literature which is relevant to this thesis. Relevant work has been done variously within the fields of sensory linguistics, figurative language and metaphor, and in some areas of the cognitive sciences which deal with the relationship between language and perception. The next chapter will explore this literature in detail, explaining the gaps filled and the contribution to knowledge made by the research I have undertaken.

Chapter 2

Literature Review

The language of perception is a topic which has received increasing interest from scholars over the past decade, especially by Winter (2019), Speed & Majid (2018b, 2019); Speed et al. (2023), Paradis & Eeg-Olofsson (2013); Paradis (2015a); Paradis & Hommerberg (2016) and Majid & Burenhult (2014); Majid (2015). While scholarly attention to the relationship between language and the senses is growing, that paid to the sense of smell in particular is still significantly lower that that paid to the other sensory modalities (especially vision), but in recent years research from diverse fields has contributed to our growing understanding of the sense of smell, and how experiences involving olfaction are cognitively processed, understood, and put into language. As well as building on work within the field of sensory linguistics, this thesis also relies heavily on work within the domain of conceptual metaphor, especially on cross-modal or synaesthetic metaphor, zone activation, and metonymy. This chapter provides a thorough overview of the existing literature in those fields.

First, in Section 2.1, I give an overview of the research landscape within the field of sensory linguistics, and a discussion of how this thesis contributes to knowledge within that field. Section 2.2 then continues with a discussion of research which underpins our understanding of how the sense of smell in particular works and is processed cognitively (Section 2.2.1). It then considers research which explores the physiological, psychological and linguistic links between the sense of smell and the other senses, before discussing studies which compare how the sense of olfaction is rendered linguistically in different languages and cultures (Section 2.2.2), an area in which much of the existing olfactory scholarship has been undertaken. Section 2.2.3 then provides an overview of the extent of the olfactory lexicon of English, and discusses studies which measure its extent and use.

Section 2.3 discusses the existing literature on conceptual and synaesthetic metaphor, and explains how this thesis fits into that field (Sections 2.3.1 and 2.3.2), then discusses how metaphor can be considered to be a scalar phenomenon rather than a binary, categorical one (the notion of *metaphoricity*, discussed in Section 2.3.3). The related concepts of zone activation and metonymy, crucial to some of the theoretical analysis in Chapters 4 and 5, are then discussed in Section 2.3.4.

2.1 Sensory linguistics

While research into how we use language to communicate sensory experience is relatively scarce, scholarly interest in the field has increased in recent years. The past decade or so has seen the publication of a handful of major volumes dedicated to the investigation of sensory language, and how speakers encode perception in words.

Much of the work done in the domain of sensory linguistics is conducted within a framework of cognitive semantics, in an approach which roots sensory language in our physical experiences and our bodily, sensorimotor interactions with the world. Key to this approach is the idea that our cognitive processes are motivated by our experiential interactions with the world around us, and the language we use to communicate those experiences reflects that (Dancygier, 2017). A key aspect of this structure of meaning-making is that only parts of an experiential knowledge base which are salient in a particular context, and to the speakers involved, need to be activated to make meaning in that context (Paradis, 2015b). Our knowledge of an apple, for instance, may include the aspect that it is a fruit which grows on trees. This facet of the meaning of *apple* would not be evoked in a situation where a friend asks us to buy them an apple from the shop, but would be if they ask us to pick them one from an orchard. This particular understanding of how meaning is communicated is important in the context of this thesis— when particular referents are used in an olfactive context, different facets of our experiential knowledge of them can be highlighted in order to form different sensory meanings, even if the descriptions involved are not explicitly olfactory in nature.

Many studies within the field of sensory linguistics focus on one particular sensory modality. Studies within the modality of vision, especially colour, are very well represented (Berlin & Kay, 1969; Spector & Maurer, 2012; Anderson, 2014). In the aural modality, Pérez-Sobrino & Julich (2014) use corpus methods to investigate the language of music. Bagli

(2021) writes comprehensively on how taste is conceptualised and communicated, using experimental methods to establish Basic Taste Terms analogous to the Basic Colour Terms established by Berlin & Kay (1969). In the domain of touch, Semino (2010) investigates the language of pain, and Speed & Majid (2020) consider the linguistic embodiment of touch alongside taste and smell . Studies focusing specifically on olfaction are rarer (Section 2.2 below contains a full discussion of these), and this thesis therefore fills an important gap in the literature by providing an in-depth study of language entirely within the olfactory modality.

While the field of sensory linguistics commands increasing interest, Caballero & Paradis (2023) note that 'research on how sensory experiences and meanings are conveyed in authentic communication is scarce,' in spite of the fact that much current research is based on the supposition that 'cognition and communication are largely shaped by our sensorimotor and perceptual systems and by our bodily interactions with the world' (Caballero & Paradis, 2023, p.2). Some studies have focused on the analysis of sensory communication through either specially elicited experimental data, such as asking participants to name specific odours (Croijmans & Majid, 2015; Majid & Burenhult, 2014). Others rely on analysis of existing bodies of text, like wine reviews (Paradis & Eeg-Olofsson, 2013), architecture (Caballero & Paradis, 2023), reviews of food (Hörberg et al., 2025), or, like this thesis, fragrance reviews (Nikitina & Furuoka, 2023).

Winter (2019), in a major work in the area of sensory linguistics, offers a very comprehensive view of the field as a whole. Winter gives a thorough overview of both the lexical content which can be placed under the banner of sensory linguistics, and the methods which researchers can use to investigate the language of the senses. He also notes (2019, p.2) that most previous studies within the field have focused on typically one, and at most two perceptual modalities, but that there is very little previous empirical work which attempts a descriptive analysis of all five senses. Following a detailed analysis of the properties of sensory adjectives in English, Winter provides a very detailed theory of sensory language. Chief among the conclusions made following this analysis are that:

> (1) The five-senses folk model is not necessarily reflected in language, but depending on one's perspective the number of 'senses' may vary: '[W]hen zooming in, one finds many more than just five categories. When zooming out, one finds fewer than five senses. Both of these perspectives are equally true' (Winter, 2019, p.235). This particular viewpoint relates strongly to the idea explored in

this thesis that the senses constitute a broad and contiguous semantic domain of perception, without clear cognitive or linguistic boundaries between sensory modalities.

(2) The notion of discrete categories of 'taste words' and 'smell words' etc. is not a reflection of how language in actual use is structured, and these categories only emerge in meta-linguistic conversations when linguists talk *about* sensory language.

(3) Perception is highly multisensory in nature, and this is reflected in language: sensory language is also highly multisensory, lending support to the idea that such language is inherently embodied.

As well as these three main points which Winter presents as the main conclusions of his monograph, he also persuasively argues against the idea that so-called synaesthetic metaphors represent true cross-modal transfers of meaning, a position which again aligns with the evidence presented in this thesis— see Section 2.3.2 for a fuller discussion of this.

The evidence presented in this thesis broadly agrees with all of these points, and supports Winter's theories of sensory language. These points relate mostly to the idea presented throughout the following chapters that the senses are rendered conceptually within one broadly contiguous domain of perception— similar to Winter's idea of sensory language being inherently multisensory, without division into discrete 'taste words' and 'smell words', for example. This thesis contributes to knowledge in this area by providing an in-depth, data-driven account of how sensory language operates in one particular modality of perception, and provides robust evidence for how that language is rendered within that domain.

2.1.1 Cross-modal studies

Much work in sensory linguistics has focused on areas in which different sensory modalities overlap, and what the linguistic realisations of these overlaps mean for our sensory cognition. These are studies with much relevance to the work in this thesis, and which offer findings which generally align with those presented here. Paradis (2015a) and Paradis & Eeg-Olofsson (2013), in studies based on the language of wine reviews, note that sensory vocabulary is often shared between multiple modalities. Paradis (2015a) uses two data sources: sets of terminological schemas for wine description published by the German Wine Institute and

the Wine and Spirits Education Trust, and a set of 85,000 reviews from the the magazine *Wine Advocate*. Paradis analyses the language of these two datasets in a way which focuses on the specific descriptors used and how the meanings of those descriptors are construed. She argues persuasively that sensory experiences are cognitively interrelated, and that sensory words like *sharp* or *sweet* are conceptually monosemous across sensory modalities, with a meaning that spans across the closely related sensory domains. This conclusion aligns very closely with one of the main contentions of this thesis, that the sensory modalities can be understood to form a broadly contiguous domain of perception within which words generally have cross-modal, monosemous meanings.

This is echoed by Paradis & Eeg-Olofsson (2013), who use the same corpus of reviews from *Wine Advocate* to investigate how sensory experiences are put into discourse and text within the wine review genre. This aim and the methods by which Paradis & Eeg-Olofsson achieve it are both very similar to the aim and methods in this thesis: the verbalisation of sensory experience is investigated through a study of a dataset comprised of reviews which are heavy in sensory language. They conclude that the main linguistic strategies employed for sensory description are descriptors with properties which are applicable across sensory modalities, and the use of 'vivid imagery that compares the characteristics of the wine with people, buildings, animals, and the hustle and bustle of market places and other events' (Paradis & Eeg-Olofsson, 2013, p.22). This again aligns with the findings of this thesis, which contends the importance of non-olfactive facets of meaning in descriptors used and also investigates how such vivid imagery-driven description is constructed. Paradis & Eeg-Olofsson also conclude, as both Paradis (2015a) and the present thesis do, that when sensory words like *sweet* or *sharp* are used across sensory modalities this does not represent polysemy or a cross-domain transfer of meaning, but rather indicates that these words are monosemous across sensory modalities.

While the methodologies of both Paradis (2015a) and Paradis & Eeg-Olofsson (2013) are similar to this thesis and both come to similar conclusions, an important difference between those studies and this thesis is that rather than investigating language across sensory modalities, this thesis focuses specifically on the language of olfaction. Focusing on one specific modality in this way allows for a very fine-grained analysis of the linguistic strategies which underpin sensory communication which can be strongly evidenced with in-depth analysis of this single modality.

Spector & Maurer (2012), working on perception from the perspective of psychology and neuroscience, investigate how colour and texture terms are applied to odours. Using an experimental method with 78 non-synaesthetic participants, the researchers asked the participants to make colour and shape/texture associations with 22 different pleasant and unpleasant odour stimuli. Every stimulus was consistently associated with specific colours and/or textures, even though 18 of the 22 odours were generally not identifiable by participants. While the identifiable odours (cinnamon, lemon, peppermint and anise) had associations which are clearly based on experience and learning (like the association of lemon with *yellow* and anise with *black*), other associations were less clearly rooted, like the association of lavender with *liquid* and mushroom with *blue* (Spector & Maurer, 2012, p.662). The authors speculate that cross-modal sensory associations to odours result from the 'joint influence of learning and natural biases linking dimensions across sensory systems' (Spector & Maurer, 2012, p.655), indicating a neurological link between the modalities of sensory perception. This conclusion aligns with one of the positions taken by this thesis, that the sensory modalities can be said to exist cognitively as a densely interconnected domain of perception, and provides evidence from the field of psychology and the cognitive sciences for this conclusion.

Much work into cross-sensory correspondence with olfaction has focused on the visual modality, usually with experimental methodologies: Blackwell (1995) uses experimental methods to investigate how visual cues affect odour assessment; Gilbert et al. (1996) consider the links between colour and olfaction; and Speed & Majid (2018b) investigate odour-colour synaesthesia.

Blackwell (1995) gave 48 participants six different fruit solutions and asked them to identify the odour. Of the six solutions, four were inappropriately dyed (e.g. blackcurrant flavour dyed red, orange flavour dyed green), and participants had significantly more difficulty identifying these solutions compared to the appropriately-coloured ones. Blackwell concludes that there is a significant influence of visual cues on olfactory perception, and that when visual and olfactive stimuli conflict, the visual cue tends to be prioritised. These results indicate that close links between the senses exist in actual perception as well as in language, further highlighting the complex and densely interconnected nature of sensory perception on a cognitive level.

Gilbert et al. (1996) also use experimental methods, investigating the 'colour of smells' by asking participants to allocate colour names, and in a subsequent experiment Munsell

colour chips, to odour stimuli. Similarly to Spector & Maurer (2012), they find strong and consistent associations between odours and certain colours. Most of these appear to have experiential grounding (e.g. cinnamon with *red*), but other terms, while consistent, have more opaque associations (tarragon with *black*). The subsequent experiment, using Munsell colour chips, delivered similar results, with the participants choosing associated colours which matched the colour names chosen by the previous participants. This indicates that colour names and samples of the colours themselves carry similar sensory meaning. The consistency of the results here again points to an experientially grounded and interconnected cognition of perception where multiple sensory modalities are linked.

Speed & Majid (2018b) investigate how odour-colour synaesthetes process odour cognition. They asked 6 synaesthetes and 17 non-synaesthetic control participants to complete a variety of tasks including an odour identification task and an odour-colour association task. The synaesthetes were more accurate and consistent in naming odours, and were also better able to discriminate between the different odour stimuli than the control group (Speed & Majid, 2018b, p.476). There was however no difference between the synaesthetes and the control group in consistency of odour-colour association— both groups of participants made associations with roughly equal consistency. The authors argue that this is because much synaesthetic experience between odour and colour does not necessarily follow real-world mapping: one synaesthete in the study, for example, associated yellow with the smell of rose rather than the expected red or pink. This means that the associations made by synaesthetes in the study are a mixture of real-world/experiential and synaesthetic correspondences. Again, this study highlights the interlinked nature of sensory and perceptual cognition, and shows that cross-sensory associations are consistent and frequent.

These studies are particularly relevant to this thesis, in that much of the language in the corpus under analysis in these pages is rather fuzzy in terms of the sensory modality to which it 'properly' belongs. Studies which have considered the relationships between the sensory modalities have generally concluded that there is a degree of cognitive and linguistic overlap between the senses: many sensory adjectives have broad meanings which can encompass multiple sensory domains, which is a viewpoint also evidenced by the language analysed in the following chapters. The results of most studies described here suggest that cross-sensory language use is generally not figurative or polysemous, but rather represents monosemous, cross-sensory meaning, a view which is shared with this thesis. The analysis here fills an

important gap in literature of this kind by offering an in-depth study of the language of one particular sensory modality, olfaction, and systematically investigating how real-world sensory language is used within that modality. By doing this, it is able to provide robust evidence which complements and adds to the approaches taken in the previous work outlined in this section.

2.2 Olfaction, language and culture

The sense of olfaction has a complex relationship with language, with culture more generally, and with the other senses. This section offers an overview of the sense of smell and how our understanding of it has changed through time, before giving a detailed discussion of linguistic research which has explored how olfaction is rendered in language.

2.2.1 The nature of olfaction

The sense of smell has been a subject of scholarly interest since antiquity, but even in the minds of the ancient philosophers, smell was very much a 'lesser' sense compared to the other sensory modalities. Bartoshuk et al. (2019) write on Aristotle's treatment of the sense of smell in *De Anima* (On the Soul) and *De Sensu et Sensibilibus* (On Sense and the Sensible), noting that he believed it to exist as 'something which occurs when a person inhales'. This treatment is then contrasted by the authors with our contemporary scientific understanding how how olfaction works in the context of the other senses.

Baltussen (2015) writes on the treatment of olfaction by various classical philosophers: Baltussen writes that while Empedocles viewed smell as part of breathing; Diogenes of Apollonia attributed it as a property of the air, specifically 'the air surrounding the brain' (Baltussen, 2015, p.37), and Plato considered olfaction—and indeed all perception—as a subjective and bodily phenomenon, with 'no permanent identity, and therefore no lasting value' (Baltussen, 2015, p.40). (For an overview of the role and status of olfaction in antiquity, see Bradley (2015), an edited volume on the sense of smell in the ancient world.)

With the rise of Christianity in the fourth century, attitudes to smell changed. The burning of incense and the wearing of personal perfumes were both admonished by early Christian leaders in the Roman Empire, before the Christian tradition gradually adopted olfactory practices by the 6th century (Classen et al., 1994, p.51). The growth of cities in the

early modern period brought with it an array of unpleasant odours, with many important waterways through European cities acting essentially as open sewers. Ben Jonson writes on the stench of the River Fleet in his poem *On the Famous Voyage*:

> How dare
> Your dainty nostrils (in so hot a season,
> When every clerk eats artichokes, and peason,
> Laxative lettuce, and such windy meat)
> 'Tempt such a passage? When each privy's seat
> Is filled with buttock? And the walls do sweat
> Urine, and plasters? When the noise doth beat
> Upon your ears, of discords so unsweet?
> And outcries of the damned in the Fleet?

By the early nineteenth century, movements had taken hold to reform sanitation in Europe, often motivated by the belief that malodours were responsible for the transmission of diseases like cholera. Eventually, modern sewer systems were built across Europe, changing the urban smellscape (Classen et al., 1994, p.79).

Around the same time, the sense of smell was receiving increasing scientific attention. In the eighteenth and into the nineteenth century, work on olfaction was primarily occupied with the categorisation of odours: Carl Linnaeus, in addition to his system for the classification of plants and animals, also developed a system to categorise odours into one of seven categories: *Aromaticos* (aromatic), *Fragrantes* (fragrant), *Ambrofiacos* ambrosial, *Alliaceos* (garlicky), *Hircinos* (goat-like), *Tetros* (fetid), and *Naufeofos* (nauseous) (Linnaeus, 1752). Linnaeus describes the effect of each of these odour types on the nerves— including that aromatic odours strengthen the nerves, ambrosial odours strengthen the heart, and goat-like odours rouse the genitals (Linnaeus, 1752, p.13). Aside from the categorical work of Linnaeus, work in this period was almost exclusively focused on the nature of unpleasant odours, due to the fact that they were understood to be vectors of disease (Corbin, 1986).

From a philosophical perspective, eighteenth and nineteenth- century writers have generally been dismissive of olfaction, regarding it as a lesser sense. Condillac calls olfaction 'the [sense] that seems to contribute the least to the operations of the human mind' (Condillac, 1754). Kant agrees, calling olfaction the 'most dispensible' sense and arguing that 'it does not

pay us to cultivate it or to refine it in order to gain enjoyment; [...] and, besides, the pleasure coming from the sense of smell cannot be other than fleeting and transitory' (Kant, 1978 [1789]). Darwin similarly dismisses an acute sense of smell as something which humans lost on the evolutionary journey from animals (Darwin, 1898, pp.17-18).

While humans are popularly considered to have a relatively poor sense of smell compared to other animals, we in fact possess very strong olfactive abilities (McGann, 2017). The human olfactory system can perceive over a trillion olfactory stimuli (Bushdid et al., 2014), which is far in excess of the 5 million or so colours which can be perceived visually. This highlights that while the sense of smell may by less culturally significant and generally considered a less 'important' sense, that does not mean that our actual perceptive abilities in that modality are poor.

Some studies have aimed to explore a major question in cognitive semantics— the degree to which language is grounded in experience and perception— through the lens of olfaction. Work by Speed (Speed & Majid, 2018a, 2020; Speed et al., 2022) in particular is very valuable in this area: Speed & Majid (2018a) presents experimental evidence which suggests that olfactory experiences are not simulated in the mind in the same way as experiences which occur in the auditory modality. Speed & Majid (2020) review how olfaction relates to embodied or grounded theories of language, concluding that evidence for sensorimotor simulation[1] is weak in the modalities of touch, taste, and smell, and that language related to those senses 'may rely on simulation of emotion, as well as cross-modal simulation of the 'higher' senses of vision and audition' (Speed & Majid, 2020, p.363) Building on this work, Speed et al. (2022) found in an experimental study that those without a sense of smell— asnosmics— did not have a lower degree of comprehension of smell or taste language than a control group, but rather were better at remembering smell terms, and rated those words with more positive valency than the control participants. These studies suggest that the language of the sense of olfaction is not as grounded in experiential knowledge as that of the other sensory modalities.

Similarly, Arshamian et al. (2020) suggest that olfaction is different from the other senses in that it has a much lower level of embodiment, resulting in increased difficulty in generating a mental 'image' of an olfactive scene. This idea in particular is important in the context of this thesis— many of the examples of olfactory description analysed in the following chapters

[1] i.e. involving both the sensory and motor functions and pathways.

rely on the evocation of a mental image through sensory modalities other than smell, in order to generate a vivid image which corresponds to the general impression of the olfactory source.

2.2.2 Olfaction cross-linguistically

In the existing literature on olfactory language, many studies approach the topic from a cross-linguistic, comparative or anthropological perspective, often from a context within the field of psychology. Generally these cross-linguistic studies find that olfactory vocabularies are to some degree culturally determined, with speakers from hunter-gatherer backgrounds (who have a closer relationship to the natural world and its odours) better able to express their olfactive experiences through words.

Kruspe & Majid (2023) discuss the olfactory lexicons of Semelai and Semaq Beri, two Austroasiatic languages which they show to have large lexicons of basic smell terms. O'Meara & Majid (2020) study olfactory metaphors in Seri, an indigenous isolate language spoken in Mexico. The directionality of these metaphors is the opposite of those discussed in this thesis— O'Meara & Majid discuss metaphors like ANGER STINKS, where olfaction is the source domain mapped to the target domain of emotion. Examples in this thesis have various source domains and a target domain of olfactive experience. They also note that olfactory metonymy is common in Seri, especially for names of plants, and suggest that there is a greater potential for metaphorical processes involving olfaction to occur in languages which have a more extensive olfactory lexicon than English.

Many of the studies comparing how olfactory experience are rendered across languages have been experimental in nature. Majid & Burenhult (2014) compare the ease with which speakers of Jahai from the Malaysian peninsula could name colours and odours, compared to a group of English speakers. They find that the Jahai could name colours and odours equally easily, but that English speakers struggled to name the odours. Majid et al. (2018) performed another odour-naming task again with Jahai speakers, this time comparing their responses to those of Dutch speakers from the Netherlands. Generally the Dutch speakers favoured concrete, comparative descriptors (*smells like lemon*), while the Jahai preferred more abstract terms (like *musty*). Despite this, analysis of the participants' facial expressions led Majid et al. to conclude that the Jahai and the Dutch speakers both had the same emotional reactions to the smells.

There is therefore general agreement in the literature the olfactory vocabulary in a particular language is predicated upon certain cultural factors. This is highlighted especially in a major study by San Roque et al. (2015), who analysed conversations in 13 diverse languages to find that while the visual modality consistently dominated conversation, the frequency of the other senses displayed a high degree of variation. In some languages, like Semai (spoken in western Malaysia), the proportion of smell language was many times higher than in Western languages like Italian and English.

While olfactory language varies greatly across cultures, Arshamian et al. (2022) show that the *pleasantness* of odours is not culturally determined, and while individuals within cultures may vary as to which odours they find pleasant, generally the hedonic value of an odour is determined by the physicochemical properties of its molecules, rather than by the culture of the smeller. This conclusion accords with that of Majid et al. (2018), who found that the Jahai and the Dutch speakers had the same reaction to the odour stimulants they named, despite choosing different naming strategies.

In summary, these cross-linguistic studies have found that the ineffability of olfaction is not a linguistic universal, but rather is culturally determined. In the words of Majid & Burenhult, 'odors are expressible in language, so long as you speak the right language'.

Cross-linguistic study is an especially fertile area of research within the field of sensory language. This thesis, focusing as it does only on English, is therefore able to usefully add to the existing literature by providing an in-depth study of how olfactive experiences are communicated in actual use by English speakers. The studies outlined in this section provide invaluable information about how olfaction works linguistically in a wide range of languages in which odours are more easily expressible than in English. The work undertaken by this thesis complements this by establishing how, when speakers are faced with the task of describing a complex sensory experience, they actually *do* verbalise that experience using the limited olfactory-linguistic tools available to them.

2.2.3 Olfactory vocabulary and ineffability

The sense of smell stands out among the five classical senses as one which is especially difficult to encode in language, in English at least, and so the purpose of this thesis is to investigate how English speakers communicate complex olfactory information in the face of this limited linguistic ability.

An important facet of the sense of olfaction with regard to this thesis is its perceived ineffability. That is to say that the sense of smell is generally thought to be one which is difficult to encode in language; olfactory experiences are hard to put into words. Levinson & Majid (2014) discuss how ineffability— which they refer to as a 'fairly unexplored nook of cognitive science'— varies across the senses, with vision being much more expressible than olfaction, and the other senses somewhere in between. Anderson (2019) investigates perception metaphor, a particularly fruitful strategy for speakers who wish to communicate sensory information when direct and literal words of perception are not available. Anderson discusses examples of metaphor where olfaction (as well as the other senses) is both the target and the source of the metaphorical language, providing an important account of how smell has been conceptualised in English (Anderson, 2019, p.79).

Some studies have aimed to establish what the olfactory vocabulary in English actually consists of. Hörberg et al. (2022), who note that previous attempts to do so often relied on preselected descriptors, take a data-driven approach to establish the extent and the semantic organisation of the olfactory domain. Hörberg et al. found 243 terms which had some element of olfactive meaning (i.e. which are statistically much more associated with olfaction than average). These terms were divided into four semantic categories: Offensive, Malodorous, Fragrant and Edible. The vast majority of the olfactory words are source-descriptor words like *vanilla*, *camphor* and *rotten egg*, as well as evaluative terms like *pleasant* or *disagreeable*.

This ineffability has been shown to manifest in some interesting ways when research participants are explicitly asked to name odours. Hörberg et al. (2024) explain that while participants in their odour-naming task often misidentified the odour, giving it an incorrect name, the name given often shared some salient aspect with the correct answer, often capturing the true odour's category (as in a cinnamon stimulus being named with the category label *spice*, or an apple stimulus as *pear*) or certain abstract features (e.g. calling a mushroom stimulus *earthy*). In short, odour misnamings tended to be predictable by semantic proximity to the target odour name, indicating a complex and interconnected sensory semantic space.

The sensory lexicons of experts can be different to those of the lay person. Professional wine tasters, for example, have a wide variety of specifically defined sensory descriptors available to them, often arranged in highly structured ways. Much existing literature on the language of olfaction focuses specifically on the language of wine. Some of these studies

were discussed above in Section 2.1.1, in the context of literature which uses wine-based data to investigate how language is applied across different sensory modalities. Some studies however focus on the specific chemosensory vocabulary which is unique to the world of wine: Lehrer (1975) is a classic study in this field, showing that while the lexicon of wine is fairly rigidly defined, 'typical wine drinkers' (i.e. not trained experts, like in some later studies) show little agreement in how the vocabulary is actually applied. Croijmans et al. (2020) find similar results working with wine experts, finding that while the experts studied generally agreed on specifics such as grape variety and wine colour, the more subjective aspects of the odour and taste of the wine prompted lower levels of agreement. While wine language is primarily rooted in the sensory modality of taste, it is relevant in the olfactory context of this thesis for two reasons: the first is that much wine description is a combination of flavour- and aroma-based language (with some writers, like Author 8 in Croijmans et al. (2020, p.524), favouring olfactory descriptions over taste-based ones) and analysis of the olfactive components of this language is one of the major ways in which scholars have investigated how olfaction is communicated in English. The second is that, as explained above, the links between flavour and aroma (taste and olfaction) are complex and multifaceted— discussion of wine language alongside more uniquely olfactory language, like that of perfumery, facilitates better understanding of how these interlinked chemosensory processes are communicated in language. Hörberg et al. (2025) fruitfully synthesise a discussion of chemosensory language by considering the language of wine alongside the language of food and perfume reviews— this study is discussed below, in the context of perfume-specific language.

Paradis and colleagues (Paradis & Eeg-Olofsson, 2013; Paradis, 2015a; Paradis & Hommerberg, 2016) has worked extensively on the language of wine, as partially discussed earlier in Section 2.1.1. These studies mainly using wine reviews as a data source, and note that most descriptions rely on either language which evokes properties which are applicable in a cross-modal sense, or 'vivid imagery that compares the characteristics of the wine' (Paradis & Eeg-Olofsson, 2013, p.22) with people, places and other events. (The conclusions drawn by these particular studies have much in common with those found by this thesis, especially with relation to metonymy and zone activation, and are discussed in more detail below in Section 2.3.4 which deals with those phenomena.) While the world of wine tasting has historically had a relatively rigid olfactory lexicon, some modern wine writers seek to describe wine in more general, impressionistic terms like *funky* or *energetic* (Brady, 2022), language which is

reminiscent of some of the more creative expression used in the perfume reviews analysed in this thesis. Timberlake (2020) writes on how this specific olfactory and (mainly) gustatory lexicon of wine can be used to exclude certain groups from the world of wine, and how it can function as an exclusionary barrier:

> So many people think that they're intimidated by wine when in fact they're intimidated by the language of wine. Someone, somewhere convinced them that before they dare try to describe what's in their glass, they must first master the hyperspecialized vocabulary of wine's professional class. But there's a twist: That vocabulary isn't fixed, it's ever-changing—a dispiriting realization whether you're a retail robot from the future or a consumer in the year 2020. The words we use to talk about wine often say more about us than the wine itself—how we want to be seen, which club we want to be a part of. Are you deductive or intuitive? A numbers gal or a feelings gal? Nerd or jock? Country or rock 'n' roll? (Timberlake, 2020)

This highlights an important aspect of olfactive language: that because of the ineffability of olfaction in English, even a supposedly rigid and codified professional odour lexicon is subject to change according to trends and context.

Outwith the world of wine, some attempts have been made to introduce defined lexicons to describe smells, generally with the goal of establishing a common sensory language to be used by experts in a particular field. These include sensory lexicons for products as diverse as kimchi (Chambers et al., 2012), strawberries (Oliver et al., 2018), dried long pasta (Irie et al., 2018), and processed and imitation cheeses (Drake et al., 2010). (See Lawless & Civille (2013) for an overview of how such lexicons are constructed and standardised.) These are generally precise, limited, standardised definitions of existing words, rather than brand new lexemes: for example, Chambers et al. (2012) define a kimchi with a *fermented* attribute as one which has a 'combination of sour aromatics associated with somewhat fermented dairy/cheesy notes that may include green vegetation, such as sauerkraut, soured hay or composed grass.'

The development of new sensory lexicons is not limited to the food and drink industry. Allen et al. (2018) propose a lexicon for describing the olfactory properties of human body odour, including the words *earthy*, *metallic* and *chipfat*, developed with professional perfumers and fragrance evaluators. Most creatively, Sissel Tolas has created Nasalo, 'an international

language consisting of words to communicate smells and smell impressions.' Tolas asked speakers of various languages to describe the same smell in one word, and analysed the responses to create the Nasalo word, examples of which include *casspo* 'sweat in conjunction with sport', *shooth* 'McDonald's', and *isjfe* 'freshly cut grass' (Agapakis & Tolaas, 2012, p.570-571).

The specific, trade-centred olfactory lexicon which has most relevance to this thesis is that of the world of perfumery and fragrance. Scholarly research in this particular field is very limited, especially outside of the field of advertising studies (Matkovska, 2024; Reichert et al., 2011, 2012; Holz, 2007; Velasco-Sacristán & Fuertes-Olivera, 2006). Hörberg et al. (2025) analyse the language of fragrance reviews alongside reviews of food and wine, finding that of those three domains perfume language is the least concrete, and contains the most evaluative terms (Hörberg et al., 2025, p.7). A key finding of this study is that there is little overlap in the sensory language used in each domain: 70% of all descriptors in the study were found within only one of the three domains, with only 10% found across all three. These shared descriptors tended to be more positively valenced, like *delicious*. This particular study is the closest in the existing literature to the work which has been undertaken in this thesis. Both studies rely on perfume reviews as a data source, and investigate them in a data-driven way from a semantic perspective. The studies differ however in that Hörberg et al. aim to perform a comparative study between modes of chemosensory perception (eating, drinking and smelling), where this thesis focuses exclusively on olfaction. This thesis also aims to investigate the mechanisms by which the sensory domains interact linguistically with the domain of olfaction, where Hörberg et al. instead provide a thorough account of the chemosensory vocabularies of those modalities and account for the importance of valence in chemosensory language.

Some recent research into the vocabulary of olfaction has suggested that the vocabulary we use to describe the senses consists of words with broad, multi-sensory meanings, and that a specifically olfactive lexicon does not strictly exist. Hörberg et al. (2024) refers to the pervasiveness of sensory terms across multiple sensory domains, noting that 80% of olfactory adjectives are used in at least one other sensory domain. Winter (2019) persuasively argues this point, asserting that most sensory descriptors have broad meanings which apply to multiple sensory modalities. Van De Weijer et al. (2024) study this phenomenon in detail, investigating how sensory antonym pairs (e.g. *sweet-sour*) vary in distribution across sensory modalities compared to the adjectives in isolation. This study is particularly valuable in that

it begins to establish the nature of precisely *how* the interconnected semantic space of sensory perception is actually interconnected, i.e. which sensory modalities appear to be linguistically linked. Much of the literature outlined in the above sections which explores olfaction from a linguistic perspective does so through a comparative lens, building a picture of how speakers of different languages render sensory experiences differently, with different linguistic tools available to them. Other studies build our knowledge of how olfaction is communicated in English through experimental means, finding how olfaction is verbalised by eliciting language in the lab or by investigating pre-selected olfactory words with participants. A major contribution to knowledge of this thesis is therefore how it deeply investigates olfactive language specifically in English in a data-driven way, relying upon a large body of natural language which lies (almost) entirely within the domain of olfaction. This contribution builds on recent work which has indicated that the meanings of sensory words may be broader than previously thought, applicable to multiple sensory modalities.

2.3 Figurative language

This section discusses the theoretical background which underpins the analyses performed in this thesis. This background is to do with establishing the degree to which particular instances of language can be considered to be figurative or literal, and how meaning can be generated and transferred within sensory domains. Section 2.3.1 discusses some general work on conceptual metaphor theory, and how this way of thinking can be applied to sensory language with the idea of the synaesthetic metaphor (Section 2.3.2). Section 2.3.3 then discusses the notion of metaphoricity— the idea that metaphor is a scalar phenomenon, rather than a binary distinction between the metaphorical and the literal. Section 2.3.4 discusses metonymy and zone activation, two semantic processes which are key to understanding how meaning is communicated in the language investigated by this thesis.

2.3.1 Conceptual metaphor

Metaphor is a cognitive phenomenon which can be defined in simple terms as 'understanding and experiencing one thing in terms of another' (Lakoff & Johnson, 1980, p.5). It is a feature of language which is crucial to how we conceptualise and communicate our experiences and the things around us. Historically, metaphor has been considered a consciously and

deliberately chosen rhetorical strategy; a type of special language used by orators and authors to create a particular literary effect through words:

> If you have something to say, you could presumably say it straightforwardly without metaphor; if you chose metaphor it was for some poetic or rhetorical purpose, perhaps for elegance or economy, but not for plain speech and ordinary thought. (Lakoff, 1986, p.216)

This idea of metaphor— as something which is purely to do with literary or 'decorative' language rather than something which occurs with regularity in everyday speech—is not one held by cognitive linguistics. Instead, metaphor is now considered to be a matter of thought and conception, not just of language: much of our everyday understanding of the world is understood through metaphorical processes.

For example, it would be ordinary and unremarkable for a speaker of English to think about a romantic relationship in the metaphorical terms of a physical journey. Two lovers may be *at a crossroads* or a *dead end*; their relationship may be *plain sailing* or it may be *on the rocks*. They might say the relationship *isn't going anywhere* and decide to *go their separate ways*. This pervasive pattern of transfer of meaning— from the domain of travel to the domain of relationships— exemplifies the idea of conceptual metaphor. The metaphor is an ordinary, unremarkable way of talking about the relationship, not a poetic or rhetorical one. Key to the notion of conceptual metaphor is that this correspondence of meaning does not only exist in the language a speaker uses, but is also the way in which the relationship is actually conceptualised cognitively.

The turning point for our understanding of how metaphor works cognitively is Lakoff & Johnson's seminal work *Metaphors We Live By* (Lakoff & Johnson, 1980). Kövecses (2002) offers a helpful summary of the key claims of *Metaphors We Live By* which challenged the accepted view of metaphor as a figure of rhetorical speech:

> (1) metaphor is a property of concepts, and not of words; (2) the function of metaphor is to better understand certain concepts, and not just some artistic or esthetic purpose; (3) metaphor is often not based on similarity; (4) metaphor is used effortlessly in everyday life by ordinary people, not just by special talented people; and (5) metaphor, far from being a superfluous though pleasing linguistic ornament, is an inevitable process of human thought and reasoning. (Kövecses, 2002, p.viii)

This view of metaphor, as something which happens unconsciously and automatically, is one which is generally accepted across the cognitive linguistic literature. Steen (2013), however, asserts that this view has taken such deep root in cognitive linguistics that cases of conscious, deliberate metaphor use are rarely discussed, and that those cases— where metaphorical language is overtly used and attention drawn to its metaphorical nature— are particularly powerful examples of metaphorical language.

A key concept within the study of metaphor is that of the semantic domain. Metaphor can be defined as a unidirectional mapping between two separate conceptual domains (like the domains of travel and love in the example above), but precisely defining the limits of a domain can prove problematic. Dancygier & Sweetser (2014) suggest that because the size and limits of what constitutes a 'domain' mean that it is difficult to determine what one actually is without ambiguity—'something as broad as Cognition could be thought of as a "domain," as could something as narrow as Tests, or something intermediate such as Education' (Dancygier & Sweetser, 2014, p.17)— we should instead consider metaphor as a mapping between two *frames*. This term was introduced by Fillmore (1982) to describe a prefabricated chunk of knowledge structure. Crucial in the context of this thesis is the gestalt structure of the frame: when an expression refers to *part* of the frame structure, the *whole* structure is made conceptually accessible. Evoking one part of the frame provides conceptual access to the whole. Dancygier & Sweetser (2014) illustrate this with the word *husband* as part of the Marriage frame:

> [T]he word *husband* cannot be properly understood other than in the context of the frame of Marriage, which (in its conventional heterosexual version) also includes a wife, a legal and spiritual bond between them, other family relationships (such as in-laws), financial implications, etc. Mentioning *husband*, *wife*, *divorce*, or *in-laws* requires reference to the entire frame: there can be no marriage without spouses, no spouses or in-laws or divorce without marriage. (Dancygier & Sweetser, 2014, p.18)

This idea of the whole frame evoked by reference to part of it, especially in the context of metaphor, is especially important in Chapter 7, which investigates how narrative-based elements like locations and characters are used to communicate sensory information. In the language analysed in Chapter 7, reviewers make reference to complex personal or situational frames, without explicitly referencing a sensory component. Because the whole frame,

including sensory aspects, is evoked by reference to the part, sensory information can be communicated through this communicative strategy.

This thesis is rooted in the theory of conceptual metaphor. Much of the analysis in the chapters which follow look at examples of olfactory language through a lens of metaphor, and will analyse the language in this light. One of the central aims of this thesis is to establish the degree to which cross-modal descriptions, like when a perfume is described as *sweet*, can be said to represent metaphorical structures of meaning. This kind of analysis relies on a specific type of metaphor— the synaesthetic metaphor.

2.3.2 Synaesthetic metaphor

Because a major focus of this thesis is these conceptual and linguistic links between the senses— cross-modal correspondences— the key theoretical concept for understanding the language under investigation is the synaesthetic metaphor. This term is used to describe figurative language which involves a transfer of meaning from one sensory modality onto another, for example the description of a piece of music (something in the aural modality) as *sweet* (an adjective from the modality of taste).

Terminology for this phenomenon varies across the literature, with some variously favouring *linguistic synaesthesia* (Holz, 2007), or *verbal synaesthesia* (Strik Lievers, 2015), but most scholars favour the term *synaesthetic metaphor*, which will be the term employed in this thesis. *Synaesthetic metaphor* has been present as a term in semantics for over half a century: Leech (1969) offers the term as one of four 'type[s] of semantic connection [...] traditionally been recognised as more important than others', defining it as one which 'transfers meaning from one domain of sensory perception to another' (Leech, 1969, p.158). Williams (1976) uses the term *synaesthetic* to describe adjective-noun pairs like *quiet colour* or *bright taste*, in an analysis of how such cross-modal pairings motivate semantic change.

Synaesthesia in the context of literary studies can be traced back at least as far as De Ullmann (1945), in an analysis of the synaesthetic metaphor of Byron and Keats. Ullmann (1963) offers an early account of synaesthetic metaphor in a more general semantics context, but the topic has received increased scholarly attention in the past two decades or so.

The usage of the word 'synaesthesia' in this strictly linguistic context is separate from its technical meaning in the fields of psychology and neuroscience, where it used to describe a specific and rare neurological phenomenon where a stimulus from one sensory modality (e.g.

hearing music) results in actual perception experienced through another sensory modality (e.g. the visualisation of colour). This neurological type of synaesthesia is not strictly related to the concept of synaesthetic metaphor. 'True' synaesthesia is experienced by a fraction of the population— estimates range widely from 1 in 25,000 to 1 in 4 adults (Johnson et al., 2013), depending on the definition of the term and how its prevalence is measured. Simner et al. (2006), regarded by Johnson et al. as the most reliable study on the prevalence of synaesthesia due in part to the avoidance of self-referral bias, places the frequency of synaesthesia at 4.4% of the population. The use of synaesthetic constructions, however, is frequent and commonplace and phrases like *sweet music* are used broadly by English speakers in general. While we may not all experience the synaesthetic sensations of physically perceiving the colour red while hearing certain notes played on a piano, it would be an ordinary thing to describe the same notes using a word rooted in the domain of taste and call it a *sweet melody*. In the words of Dancygier & Sweetser (2014, p.60), we all 'have some crossmodal associations'. One of the main contributions to knowledge of this thesis is that it uses a large-scale, data-driven body of evidence from an in-depth study of a particular sensory domain, the domain of olfaction, to argue that these cross-modal associations do not constitute metaphorical usage. Instead, I argue in the following pages that when words like *sweet* are used in an olfactory context, this is a monosemous sensory meaning which is applicable across a broad domain of perception without a figurative transfer of meaning.

Winter (2019) argues strongly against the use of 'synaesthetic' to describe the phenomenon of cross-modal sensory language, writing that so-called synaesthetic metaphors are neither synaesthetic nor metaphorical. According to Winter, there are certain presuppositions underlying the use of the word 'synaesthetic' in this context which may not chime with the reality of the cognitive-linguistic phenomena at play when such language is used. The crux of Winter's argument is that so-called synaesthetic language does not involve mappings between separate domains, but rather represents close associations between linked, or even even contiguous, aspects of perceptual experience. This means that in phrases like 'sweet fragrance', the word *sweet* is not being used in a metaphorical way. Rather, it has a broader literal meaning which can be used with the sense of smell (or e.g. hearing, as 'sweet melody') as well as its prototypical use with the sense of taste; the literal meaning of 'sweet' extends beyond taste into other domains of perception.

Although Winter's argument against such constructions being 'synaesthetic' is persuasive,

and part of the analysis undertaken in this thesis agrees with the viewpoint that sensory adjectives like *sweet* have literal cross-modal meanings,'synaesthetic metaphor' is a standard piece of terminology in the literature. As well as the early uses of the term by Leech and Williams which were referred to previously in this section, the term is commonplace in contemporary literature on the topic. Strik Lievers (2015), writing on the directionality of synaesthetic metaphors in a poetic context, does not interrogate the term. In their definitive work on figurative language Dancygier & Sweetser (2014) also use 'synaesthetic metaphor' as the 'standard' term, offering a clear description of the phenomenon without muddying the terminological waters. Winter & Strik Lievers (2023) also use the term throughout their paper, investigating semantic distance in synaesthetic metaphor.

For those reasons, in the following pages I will use the term 'synaesthetic metaphor' in line with much established literature in the field, in order to facilitate clear and consistent analysis and comparison with past studies. While Winter's argument against such expressions being synaesthetic is persuasive, the nature of that relationship—what the real-world use of cross-modal figurative language can suggest about the cognitive-linguistic relationships between sensory modalities— is one of the main questions I will investigate in the following pages, in particular in Chapter 6. For that reason, the standard term in the literature, 'synaesthetic metaphor', will be the one employed in this thesis.

What are the limits of the term? In some studies (e.g. Marotta (2012), working in Italian), only one half of the metaphor pairing need be from a sensory domain. This would allow phrases like *obscure idea* or *dark mood* to be considered synaesthetic metaphor. In their discussion of synaesthetic metaphor Dancygier & Sweetser (2014, p.60) note that when the term is used to describe such 'one-sided' sensory constructions, it is often in the context of expressions about emotion, like *bitter sorrow* or *sweet love*.

Because the language under investigation in this thesis is entirely to do with the sense of smell, adopting this approach would mean that every metaphor in the corpus would be a synaesthetic one. Therefore, only expressions involving transfers of meaning from one of the senses to another (in this analysis, the sense of smell) will be considered to be synaesthetic metaphor. This is in line with the approach taken by previous researchers, such as Strik Lievers (2015) in her analysis of synaesthetic metaphor in poetry and Dancygier & Sweetser (2014)'s comprehensive textbook on figurative language.

Work on metaphor specifically in the context of olfaction is scarce. Zawisławska &

Falkowska (2021) undertake a study which shares some aims and aspects of methodology with this thesis. Using a corpus of synaesthetic metaphors in Polish, they offer a thorough description of the types of metaphorical construction contained within their corpus. They distinguish three main types of atypical metaphor: 'mixed metaphors' which have more than one source frame; 'entangled metaphors,' which have syntactic dependencies which conflict with the semantic information in the metaphor[2]; and narrative metaphors which are elaborated across multiple sentences. This latter type of metaphor is very similar to the language explored in Chapter 7 of this thesis, which describes olfactive description which relies on narrative elements like character and setting to communicate olfactory information. Where that study diverges from this thesis is that Zawisławska & Falkowska use a Polish-language corpus consisting entirely of (what they deem to be) synaesthetic metaphor from the world of perfume to investigate the phenomenon and generate a taxonomy of what those metaphors can look like, while this thesis employs a corpus of broader olfactive language in order to investigate how much of that language broadly can be considered to be synaesthetic in nature.

This notion of synaesthetic metaphor, and the degree to which it is actually metaphorical, is a key concept which underpins much of the work in this thesis, especially that in Chapter 6, which deals with olfactive description which relies on terms from non-olfactory sensory domains to communicate olfactory meaning.

2.3.3 Metaphoricity

Another key theoretical concept in this thesis is that of *metaphoricity*— the idea that metaphor is not a binary, categorical phenomenon but rather a scalar one. That is to say that metaphor can be a matter of degree: some utterances are more metaphorical than others. Julich-Warpakowski & Jensen (2023) explain that while there has been an increased interest in challenging the binary distinction between the metaphorical and the literal in recent years, the term *metaphoricity* is used with often inconsistent, overlapping or unclear meanings in the literature.

Julich-Warpakowski & Jensen (2023) enumerate two different conceptions of the term *metaphoricity*. The first is the status of an utterance as being metaphorical (or not)— a

[2]E.g. 'The citrus sweetness quiets down,' which has a conflict between a noun from the domain of taste and a verb from the domain of hearing.

categorical understanding which deals with a binary categorisation of an utterance as being metaphorical, or not metaphorical. This type of categorisation is characteristic of studies which aim to 'empirically and systematically identify metaphor in discourse data' (Julich-Warpakowski & Jensen, 2023, p.18), such as Steen et al. (2010) and Nacey et al. (2019), both of which deal with systematic methods for identifying metaphor.

The second conception of metaphoricity is one which rejects the binary categorisation of metaphorical versus literal, and allows for metaphor to be considered a matter of degree. In the words of Semino (2008, p.14), 'it is generally recognized that metaphoricity is a matter of degree, and that the boundary between metaphorical and non-metaphorical expressions is fuzzy'. An interesting question within this notion of metaphoricity is precisely what it is that is more or less metaphorical: do expressions exhibit degrees of metaphoricity, or do mappings, or do particular utterances in concrete situations (Julich-Warpakowski & Jensen, 2023, p.20)?

Some studies have suggested a relationship between closeness of mapped domains and degree of metaphoricity. Hanks (2006) writes that degree of metaphoricity is determined by how many semantic properties are shared by the source domain concept and the target domain concept. According to Hanks, this is because the fewer the shared semantic properties between two domains, the harder the reader/hearer has to work to create a construal. Consider the following examples, all taken from Hanks (2006, pp.23-25):

(1) a sea of blood

(2) immediately a sea of hands shot up

(3) the rough sea of life

In Example 1, the degree of metaphoricity exhibited is low. There is a high degree of semantic overlap between the source and target domains in this example: the source domain, the sea (=ocean), is a concrete, liquid substance, as is the target (blood). Example 2 is more metaphorical: while the target is a concrete referent, it is not a liquid substance. Metaphoricity is highest in Example 3, since life is an abstract concept mapped to the concrete *sea*.

For the purposes of this thesis, use of the term *metaphoricity* will refer to the conception that metaphor is a scalar, not a binary, phenomenon, and utterances can be considered to be metaphorical to a matter of degree. Examples of olfactive language explored in the following chapters exhibit language which is metaphorical to varying degrees, especially in relation to

cross-modal vocabulary. Where some examples of cross-modal language (e.g. taste words like *sweet* being used to describe fragrance) are not metaphorical at all, other cross-modal pairings which are more semantically distant (like a fragrance being *blue*) has a higher degree of metaphoricity. This idea is explored in depth in Chapter 6, which investigates the linguistic relationship between olfactive description and the other sensory modalities.

2.3.4 Metonymy and zone activation

Dancygier & Sweetser define metonymy as 'the use of some entity A to stand for another entity B with which A is *correlated*' (Dancygier & Sweetser, 2014, p.100, emphasis in original). This stands in contrast to metaphor, which is a mapping between two separate domains. The active zone is a concept which is closely related to metonymy, and which shares blurred borders with it: attempts have been made (Paradis, 2004; Geeraerts & Peirsman, 2011; Ruiz de Mendoza Ibáñez, 2011) to delineate these concepts, with researchers drawing lines in different places.

In the context of the sensory language investigated by this thesis, metonymy plays an important role. In conventional discussions of fragrance, metonymic constructions are common, in that fragrances are often referred to by one of their major components in part-for-whole metonymy. A fragrance characterised by flowers is typically described metonymically as *a floral*, for example, or one characterised by prominent oud as *an oud*.

The limits and boundaries of metonymy and metonymization are not universally agreed upon in the literature. Paradis (2004) draws a clear distinction between metonymization and a related concept, facetization, comparing the two phrases '*the red shirts won the match*' and '*the court had to assume that the statement of claim was true*'. In Paradis's view, only the first of these phrases represents an example of metonymization. This is because outside of the context of this particular utterance, PLAYER and SHIRT represent two disparate senses which evoke two different entities represented by two different lexical items. It is the given context— in sport, the colour of the shirts is used to distinguish teams— which allows the understanding of the word *shirt* to mean *player*. In contrast, COURT 'conventionally covers at least four entities, namely "ADMINISTRATIVE UNIT," "BUILDING," "INTERIOR OUTFIT," and "PEOPLE/STAFF"' (Paradis, 2004, p.252) and any of these meanings can be contextually distinguished. This latter example is termed facetization: the formation of a construal based on an aspect (or *facet*) of meaning. The term *facet* originates with Cruse (1995), who defines

it as 'a discrete component of a single sense,' illustrated most clearly with the senses TEXT and TOME of the word *book* (Cruse, 1995, p.44). Paradis draws a distinction between two different types of facetization: those involving two facets—an abstract and concrete one, like BOOK— and those which have facets to do with PEOPLE, BUILDING and *institution*, like COURT.

Ruiz de Mendoza Ibáñez (2011), however, challenges the approach taken by Paradis, calling facetization another term for what Croft (1993) labelled domain highlighting, i.e. 'giving primary status to what is otherwise a secondary conceptual domain' (Ruiz de Mendoza Ibáñez, 2011, p.106). Ruiz de Mendoza Ibáñez notes that facets and active zones, (the latter discussed fully below) are highlighted subdomains of a sense, and can overlap: in the phrase *we ate rabbit*, the meat 'qualifies as both the active zone and the meaning facet of *rabbit* (Ruiz de Mendoza Ibáñez, 2011, p.107). The difference between the facet and the active zone, according to this analysis, is that the facet is an inherently *secondary* subdomain, where an active zone can be a central aspect. In the example of the rabbit, the meat is a 'highlighted secondary conceptual element' (Ruiz de Mendoza Ibáñez, 2011, p.108), in that the edibility of a rabbit is a non-central property. It is possible to imagine a non-edible rabbit, but not one without a central characteristic like size or colour. Similarly, it is possible to imagine a physical book which does not contain any text (a blank scrapbook), or a novel which does not have physical form (an ebook, or in the phrase *everybody has a book inside them*). While it is important to draw a distinction between these two terms here, the concept of facetization is not one which is employed in the analysis in the following chapters—discussion here serves to demarcate the boundaries of a more relevant analytical concept, the active zone.

The active zone is an important concept in the context of this thesis. The concept was introduced by Langacker (1984), who defines it as the 'portions of a trajector or landmark that participate directly in a given relation' (Langacker, 1984, p.177). Consider the examples below (4-6 taken from Langacker (1984), and 7 from Langacker (1999)):

(4) *Your dog* bit *my cat*

(5) *Roger* heard a noise

(6) Susan has a *cigarette* in her mouth

(7) *The kettle* is boiling

With respect to the active zone, the things represented by the italicised phrases would not

take part in relations as a whole. Rather, a salient part or aspect of the thing is activated: in Example 4 this is the teeth of the dog and an unspecified bitten part of the cat; in Example 5 it is Roger's ears and mental processes; in 6 the filter end of the cigarette; in 7 the water inside the kettle. According to Langacker, this is an ordinary and usual way of using language— the activation of a particular zone in communication is the 'normal situation' (Langacker, 1984, p.178). While scholars generally agree that zone activation is something which happens frequently (Geeraerts & Peirsman, 2011, p.90), its theoretical status appears less certain— Paradis (2004) calls both facetization and zone activation 'the reverse of metonymy' (Paradis, 2004, p.262), but Langacker (1999, p.67) categorises zone activation as 'a special case of metonymy'. The analysis in this thesis broadly follows the former classification, treating examples of zone activation in the sensory language analysed in the following chapters not as examples of metonymization but as a distinct, if related, phenomenon. The analysis in the main chapters of this thesis will focus on the relationship of zone activation and metonymy to the language of olfaction— these are the two most relevant concepts in terms of how sensory language is conceptually structured.

Geeraerts & Peirsman (2011) offer a convincing argument as to the degree to which examples of zone activation (and facetization) count as metonymy. In their view, examples like 4 do not instantiate shifts of reference, and cannot be termed metonymy. They note that the dog and the cat are both involved as 'animate, volitional entities', and that the action of BITING necessitates a volitional subject (Geeraerts & Peirsman, 2011, p.101). Examples like 7, on the other hand, are examples of genuine metonymies: BOILING necessitates a liquid, and forces a shift of reference from the kettle to its contents. This focus on the shift in reference as a defining feature of metonymy creates a clear dividing line between cases of metonymy and of zone activation.

In the context of sensory communication, zone activation is a crucial theoretical concept. In examples of olfactive language which employ source-based description, like those predominantly discussed in Chapters 4 and 5 of this thesis, a question is raised about precisely which zones are being activated. Is only the odour of the comparator communicatively relevant, or do other aspects of it also come into play? If a perfume is described as smelling like *cherry*, does the colour, the juiciness, and the flavour of the cherry enter into the construal of the described odour, or only the cherry smell? A detailed discussion of this is given in Chapter 5, but in summary, the collocates of such source-based descriptions (e.g. *juicy cherry*, *red cherry*)

suggest that more holistic, multi-sensory, experientially grounded understandings are evoked rather than specifically odour-based zone activation.

A similar question is broached by Geeraerts (1993), in a study of the boundary between polysemy and vagueness. The problem posed by Geeraerts is that the distinction between polysemy and vagueness is not a stable one: 'what appear to be distinct meanings from one point of view turn out to be instances of vagueness from another' (Geeraerts, 1993, p.283). Geeraerts describes a complex system of meaning which contains inherent contradictions, in that certain criteria for polysemy or for vagueness may yield different results in different contexts. According to Geeraerts, vagueness is distinguished from polysemy in terms of whether a particular aspect of meaning is an inherent part of the underlying semantic structure of a lexical item. Geeraerts uses the example of the word *neighbour*, which is not polysemous between the readings 'the man who lives next door' and 'the woman who lives next door'. The semantic information associated with neighbour 'does not include a specification regarding sex', but rather is vague as to that particular dimension (Geeraerts, 1993, p.228). The question in regards to the language under investigation in this thesis is whether words like *smooth* or *sweet* are polysemous between sensory modalities— if the association with a particular 'source' sense like touch or taste is an inherent part of the semantic structure of these words— or if they are vague and unspecified terms which can be applied equally literally between different modalities of perception. This question is especially relevant in Chapter 6, which focuses on how words to do with non-olfactory sensory modalities are used to communicate olfactory information.

Another important conclusion drawn by Geeraerts is that because the distinction between polysemy and vagueness is so contextually dependent, this highlights how work in semantics is inherently interpretive. Meanings arise from contexts, and 'it is us, the interpreters, who choose or provide the contextual perspectives that lead to a particular interpretation' (Geeraerts, 1993, p.260). Many of the interpretations which follow in this thesis are necessarily divorced from their sensory contexts: given the level of subjectivity involved, it would not be useful to experience the actual sensory contexts of the over 200 examples from the corpus which are analysed in the following pages by obtaining samples of each of the fragrances which are reviewed. Analysis of this particular kind of descriptive language is therefore especially reliant on the particular interpretation of the linguist, and any conclusions drawn about how the vocabulary of the senses works semantically must be understood in that light.

This question of polysemy is a very important one in sensory language: namely, are sensory adjectives like *sweet* polysemous between sensory modalities (*sweet wine*, *sweet fragrance*, *sweet melody*, etc.) or do they have a single sensory meaning, applicable across multiple modalities of perception? The following chapters of this thesis will argue the latter, that such sensory descriptions have multi-modal meanings which reflect a complex and interconnected sensory semantic space. By making this argument using a data-driven methodology rooted in real-world language, this thesis makes an important contribution to knowledge, filling a gap in the literature where previous research has not interrogated this question from an olfactory perspective.

Paradis & Eeg-Olofsson (2013), in their analysis of the language of wine reviews discussed in Section 2.1.1, conclude that much of the sensory language of the reviews represent zone activations. Their approach and analysis have much in common with this thesis— as shown in the following pages, especially Chapters 4 and 5 which deal with direct, source-based odour description, much of the olfactive description in the corpus under investigation here relies on zone activation to communicate sensory information. A key difference between the application of this thinking in the context of wine and the context of perfume, however, is that wine is experienced through multiple sensory modalities, where fragrance is necessarily experienced through only one. While the most important feature of a wine is its taste and flavour, the visual component of a wine is also relevant (its colour; its movement in the glass), as is its smell, and its texture in the mouth. In a fragrance review, the olfactory component is the only salient modality (barring mentions of how e.g. the bottle looks, which have more relevance to the fragrance as a consumer product than as the kind of olfactory experience which interests us here). However, the sensory construal formed in a perfume review which uses (for example) *cherry* as a point of comparison nonetheless relies on the whole (*cherry*) standing for a sensorily salient part, primarily the cherry's odour, but also its flavour through the chemosensory link between smell and taste, and aspects like colour through associative meaning.

2.4 Conclusion

Taken together, the literature described in this chapter makes up a large and growing body of scholarship to which this thesis adds. The state of the field in olfactory linguistics is especially

exciting, with a number of impactful studies released in the past 5 years. The contribution which this thesis makes to knowledge in this area is through providing an in-depth account of a large volume of specifically olfactive language which was collected in the wild and produced spontaneously with the actual goal of communicating complex olfactory experiences. This is something which has not been fully investigated previously. There are very few studies which have undertaken work with a similar goal, and those which have take different approaches to this thesis: Hörberg et al. (2025) and Zawisławska & Falkowska (2021) both use corpora comprised of fragrance reviews as data sources and are the closest published studies to this thesis in aim and methodology, but do not overlap with it entirely.

Hörberg et al. (2025) aim to contrast the language of olfaction with other chemosensory vocabulary, offering a valuable comparative study of the different vocabularies of eating, drinking and smelling and how they overlap. This thesis, by focusing only on the olfactory modality, is able to provide a fuller, more complete picture of how olfactive language works which complements this previous work.

Zawisławska & Falkowska (2021) focus on metaphor in their study, which uses Polish-language data. This thesis works on metaphor to some extent, but fills a gap adjacent to Zawisławska & Falkowska's by also asking broader questions of the data to investigate how non-metaphorical olfactory language works, and of course uses a dataset in English rather than Polish.

A third study which is methodologically and theoretically very close to this one is that by Paradis & Eeg-Olofsson (2013). Also using a review-based dataset (in their case, wine reviews), they argue a very similar point to one which is central to this thesis: that cross-sensory descriptions do not represent metaphoric transfers of meaning, but rather are monosemous across sensory modalities. Paradis & Eeg-Olofsson make this argument specifically about wine language, which is comprised of both olfactory and gustatory elements as well as having some influence from the modalities of vision and touch—texture, clarity and colour are all important in wine discourse. The fragrance language used as a dataset in this thesis is entirely olfactive, and any use of terms from other sensory modalities is therefore inherently cross-modal. This thesis therefore addresses an adjacent gap in the literature by investigating a similar question using a similar methodology, but from a different, entirely olfactory perspective.

The work outlined above goes part of the way towards answering the main questions

posed by this thesis, as outlined in Chapter 1. As introduced in that chapter, the main aim of this thesis is to find out, in light of the ineffability of olfaction discussed in Section 2.2.3, what words and linguistic strategies English speakers use when they wish to verbalise complex olfactory experiences. Some of the literature reviewed in this chapter contributes important parts of the answer to this question, but does not paint a full picture. Much of the work (e.g. Croijmans & Majid (2015); Caballero et al. (2019)) focuses exclusively on one particular sensory stimulus, like coffee or wine. Other studies, generally those from the cognitive sciences with experimental methodologies like those by Speed & Majid (2018b) and Casillas et al. (2019), focus on the ability of participants to identify and name specific test odours, rather than what spontaneous odour *description* looks like. This thesis therefore makes a valuable contribution to knowledge in the field by investigating actual spontaneous olfactive description in order to find out the lexical and semantic makeup of how people verbalise their olfactory experiences.

Much of the work outlined above has also been very lexically focused. Another key question which this thesis seeks to answer is to identify the semantic domains from which descriptive words for olfactory experiences originate, and to establish by what semantic processes their use is motivated. Most of the studies outlined above focus on the words used to describe the smells, without categorising them by semantic domain. Hörberg et al. (2025) does focus on semantics, but again uses this to contrast the vocabulary of the modality of smelling with those of eating and drinking. By focusing as it does on the semantic makeup of olfactive description, this thesis not only provides detailed information about what words people use to describe smells, but also is able to paint a clear picture of the semantic sources of those words, something which has not been the focus of previous studies.

In terms of metaphor, this thesis again contributes to the field mainly by maintaining an olfactory focus. The extent to which cross-sensory description (describing a perfume as *sweet* or music as *soft*) can be said to be metaphorical is a topic which has been much discussed in the sensory linguistic literature, as discussed above. The conclusions of this thesis in this regard—that such language use is not metaphorical, but that sensory words have broad meanings which cross the boundaries of sensory modalities in a contiguous semantic space of perception—accords with previous work in the field, especially with the conclusions reached by Rakova (2003), Winter (2019) and Paradis (Paradis (2015a), Paradis & Eeg-Olofsson (2013)). By investigating a large dataset of entirely sensory language, this thesis adds to this

previous work with new data and provides important evidence which supports those scholars' conclusions from the modality of olfaction.

This chapter has offered a thorough overview of the literature which informs this thesis, and explained how this thesis makes a strong contribution to that body of literature with the dedicated investigation of a corpus comprised of language describing experiences in a single sensory modality. Next, I will provide a description of the methodology which underpins my research, including how the corpus was compiled and semantically tagged. Details about why the remaining chapters of the thesis are structured the way they are, according to semantic domain, are also included in the following chapter.

Chapter 3

Methodology

Methodologically, this thesis belongs to the field of corpus linguistics. The data in which the research is rooted consists of a 2.4-million-word corpus of consumer fragrance reviews, which has been tagged according to semantic domain and interrogated based on the frequency and keyness of those semantic tags. Adopting a corpus methodology means that through a large set of data, linguistic patterns can become visible, and crucially that the answers which this thesis will reach are grounded in real-world language. A corpus approach based on a mainly olfactory dataset allows for a thorough interrogation of a large volume of highly relevant, real-world language, and means that it is possible to more convincingly establish the linguistic strategies used by speakers who wish to communicate complex olfactory information and the semantic sources of the words they choose. The questions which this thesis seeks to address which were explained in Chapter 1— in particular the question of the semantic sources of non-literal sensory language— are firmly grounded in semantics and the relationships between semantic domains from a sensory perspective. The application of semantic tags to the corpus therefore allows for the kind of fine-grained and meaning-driven research which will allow these questions to be answered most effectively.

This chapter explains in detail how the corpus was constructed and tagged, what the most frequent and important semantic domains are in the corpus, and how the semantic makeup of the dataset informs the way this thesis is structured. Focusing structurally on semantic domains in this way means that the thesis as a whole remains effectively geared towards answering the semantically-grounded questions established in Chapter 1, and provides a strong framework within which the bulk of the corpus analysis in Chapters 4, 5 and 6 can be most clearly and effectively undertaken.

3.1 Data collection and corpus construction

The main dataset investigated in the following chapters is a 2.4 million word corpus composed of user-generated reviews on the perfume community site Fragrantica[1]. Fragrantica is an online resource which aims to provide detailed, community-driven information for enthusiasts of perfume and fragrance, offering encyclopedia-like entries for particular fragrances, including information on their ingredients and notes[2], and on the fragrance houses which manufacture and market them. At the time of writing, the English language edition of the site boasts 1.2 million registered users, and lists just over 89,000 fragrances in its pages. Fragrantica was founded in 2007 and while the user base of the English-language edition of the website is largely based in the United States, it has a wide international reach— the site is available in 18 languages including French, German, Arabic, Russian, and Hebrew. Each of these international editions of Fragrantica has its own separate count of users and fragrances listed (at time of writing the Portuguese site has 163,000 registered users and the Romanian one 12,000, for example), so these numbers are specific to the English-speaking edition of the site. This also means that the reviews collected to form the corpus are all in English (any non-English reviews would appear on the respective international edition of Fragrantica), resulting in a fully English-language corpus with no need for additional cleaning of the data in this respect.

A key feature of Fragrantica is its system of community-sourced fragrance reviews, where registered users share their opinions on and analysis of the fragrances listed on the site. In total at the time of writing, the English-language edition of the site lists approximately 1.7 million published reviews. These community reviews are what form the corpus under investigation in this thesis. Because they consist overwhelmingly of language to do with smell and olfactive experience, they form a data source particularly well suited to building a corpus which can be used answer questions about the nature of olfactive language and how English speakers verbalise their olfactive experiences. Fragrantica specifically was chosen as the data source for the corpus because it is by some distance the largest and most heavily populated site of its kind, which allows access to a very large number of reviews freely and

[1] Fragrantica.com

[2] The perceived olfactive components of a certain fragrance, which often overlap with but do not necessarily correspond to its actual ingredients. For example, a perfume may have a *honey note* but not contain honey as an ingredient.

easily. The reviews are also written by Fragrantica's very large user base, so the corpus is not biased towards the language of any single author. The particular layout and construction of the Fragrantica site also allows for technically straightforward automatic collection of data, facilitating the creation of an appropriately-sized corpus with freely available and accessible tools and methods.

As shown by the example reviews offered on Page 2 in the introduction to this thesis, there is a wide stylistic range represented in the reviews from Fragrantica which comprise this corpus. While using these reviews as a data source provides a strong grounding for analysis in that they consist almost entirely of description of olfactory experience, it is important to note that there are some limitations inherent to the data set. Firstly, the reviews were written by members of a community of enthusiasts, so there is likely to be an over-representation of specialised language and jargon which is aimed at fellow enthusiasts who share domain-specific experiential knowledge. Secondly, the communicative goals of these authors are also important to bear in mind. In the specific textual and social context of an online, public post which can be given likes and direct, instant feedback, reviewers may focus less on communicating accurately and naturally the things they are smelling and be incentivised instead to entertain, writing amusing or especially imaginative prose.

While these limitations of the dataset are important to consider, the patterns which the data exhibit can still be said to be broadly representative of English more generally for two main reasons. The first is that while many of the reviews in the corpus are idiosyncratic or written to amuse, examples such as these are salient rather than frequent, and a large majority of the dataset is made up of stylistically straightforward descriptive reviews. The second is that in order for those more complex or idiosyncratic reviews to be effective, they must exploit extant semantic pathways and correspondences of meaning in order to In summary, while the dataset is limited in some ways in how directly it can be generalised, these reviews nonetheless form a strong, sensory-specific dataset which is ripe for analysis, so long as these given caveats are borne in mind. The central aim of this thesis is to investigate the verbalisation of complex olfactive experiences, and while the chosen data can be said to be idiosyncratic in places, its density of olfactory-specific language means that it is nonetheless the most effective and representative source of such experiences available for a corpus-driven analysis.

The corpus was compiled by using a web crawler, Octoparse, to skim the review data

from the site. Octoparse (Octopus Data Inc., 2024) is a tool which automatically scrapes chosen data from a given website, outputting a CSV file containing the collected lines of data. In this case, collected data includes three columns: the ID of the user who posted the review, the name of the fragrance reviewed, and the full text of the review itself. The software was allowed to run until it had collected 25,000 individual reviews, which was deemed sufficient to construct an appropriately-sized corpus within the technical constraints of the freely-available version of Octoparse. Sampling of reviews took place at the end of January 2022. Reviews on the site are arranged in reverse-chronological order, and the webcrawler software was set to move backwards through these reviews to collect all those which were posted in November, December and January 2021-2022 to form the basis of the corpus. Once the data was collected, it was exported and then converted to plain text files which are readable by the corpus analysis software, AntConc (Anthony, 2023). In total, the 25,000 collected reviews yielded a corpus of just under 2.4 million words, a sufficient size for the aims of this thesis. This corpus is comparable in size to those used in similar research: Hendrickx et al. (2016), who use NLP tools and techniques to investigate the language of wine reviews, have a dataset of 76,585 reviews totalling around 2.9 million words. and Turan et al. (2024), who also use Fragrantica data, employ 13,825 fragrance reviews in their sentiment analysis of fragrance language, around half that of the dataset employed in this thesis. Some other research uses much smaller or much larger corpora: Nikitina & Furuoka (2023) use sentiment analysis to interrogate a dataset of around 55,000 words, all taken from Fragrantica reviews of one fragrance, Tom Ford's *Black Orchid*. Hörberg et al. (2025) use a larger dataset of around 25 million words of fragrance reviews, alongside a 6-million-word wine review corpus and a 300-million-word food language corpus, as a basis for language modelling research into sensory vocabularies. (The perfume review data of Hörberg et al. were taken from the websites Basenotes and Perfumo, which are similar in structure and purpose to Fragrantica.) In the context of this other work in the field, a corpus of 25,000 reviews totalling 2.4 million words was deemed sufficient for the questions asked in this thesis, especially because generating a much larger corpus like that used by Hörberg et al. would have required the use of a different sampling methodology due to the particular layout of the Fragrantica website and the limitations of the web-scraper software.

With the review data collected and stored as plain text, the corpus database was then formed using AntConc (Anthony, 2023). The final corpus database includes only the review

text, with the reviewers' usernames and names of fragrances excluded. These details are retained in the original data files for reference. Fragrance names were removed from the corpus because the presence of frequently repeated fragrance names introduced noise into collocate searches, where certain search terms had highly ranked collocates only because of collocation within a fragrance name— for example, the word *pink* collocates frequently with *sugar* not because of any correlation between the two words in descriptive text, but because the fragrance house Aquolina produces a popular fragrance named *Pink Sugar*. While removing the fragrance names associated with each review did not solve this issue entirely (fragrance names mentioned within the body of reviews remain), it did make collocate searches much clearer and more efficient.

During the process of comping the corpus, there were some potential areas of concern with regards to the limitations of the Fragrantica data in terms of balance and representativeness. The first of these is the potential for over-representation of particularly prolific review writers and of particularly popular fragrances in the data as a whole. The second concerns the potential that the chronological sampling methodology used would lead to a seasonal (specifically wintry) bias in the data. This is because the reviews were all collected as they were posted to the site over the winter months of November, December and January, there is a possibility of a bias in the reviewed fragrances towards the kinds of warm, woody, spicy fragrances which in the fragrance community are associated with winter, rather than more 'summery' floral- and citrus-forward perfumes These two concerns are also linked in that because reviews were sampled over a single contiguous period of time, it was possible that a popular fragrance released in, say, November 2021 could feasibly make up a very significant proportion of the reviews posted in the following three months. Inspecting the corpus data (and the more thorough interrogation of the data throughout this thesis) shows that neither of these concerns are borne out in the makeup of the corpus: the most prolific user, who goes by the username wst, has written a total of 187 of the sampled reviews, comprising 12,587 words and 0.5% of the overall corpus by word count. User wst is the most prolific by some distance, with the next most prolific having written 98 of the sampled reviews. In total, 7,554 unique review writers are represented in the corpus. Little information is available about the people who wrote the reviews: their individual user profiles (from which data was not collected by the webcrawler software) give no biographical information such as age or location, and the profile template on the site includes only slots for favourite fragrances,

owned fragrances, and wanted fragrances.

The most heavily-reviewed fragrance in the corpus is *Baccarat Rouge 540* by Francis Kurkdijan, which is reviewed 27 times out of the 25,000 total reviews. Several fragrances are reviewed a similar number of times, usually new (at the time) releases such as *Lady Million Fabulous* by Paco Rabanne and popular 'classics' like Chanel's *No. 5*. The representation of unique fragrances is larger than that of unique reviewers: the corpus overall contains reviews of 8,811 unique fragrances, offering a very wide range of olfactive experience which has been put into words by a wide range of users, which has the potential to give a very broad spectrum of olfactive language for analysis.

The second potential issue, that because of the decision to use a chronological sampling, wintry fragrances and associated language would be overrepresented in the corpus, is not borne out either. The Fragrantica site collects user-generated data on the seasonality of fragrances (i.e. users can select whether they interpret a fragrance as associated with spring, summer, autumn or winter). While it was not possible to collect this data with the webcrawler software, a small random sample of 100 reviews checked against Fragrantica's data on each fragrance's seasonality does not indicate a wintry bias in the reviews collected to form the corpus. In the sample of 100, each season has a roughly similar representation, with a slight bias toward Summer: 23 fragrances are rated as mostly autumnal, 20 as mostly wintry, 26 as mostly belonging to spring, and 31 as mostly summery. Close interrogation of the corpus in the body of this thesis indicates, as will be explored fully in Chapter 4, that the language of the corpus does not skew wintry either, despite the timing of the data collection— when seasonal terms are used in the sensory descriptions contained in the corpus, they are generally to do with the warm, sunny weather characteristic of summer, and mentions of winter are rarer.

A further potential limitation of using the Fragrantica data for this thesis, and of using online communication for linguistic research more generally, is that online communication as a communicative modality has its own features and characteristics, just as written and oral language can differ from each other (Collins, 2019). While reviewers on the site are sometimes in dialogue with each other (as can sometimes be seen in some of the language of the corpus, where a reviewer (dis)agrees with the viewpoint of a previous poster), reviews are posted asynchronously, and it is not technically feasible to extract conversational threads of this kind for large-scale analysis. The particular motivations of reviewers can also be

influenced by the public-facing online modality in which they are writing: reviewers may be motivated more by writing amusing or entertaining prose than by communicating their olfactory experiences in natural language. This is important to consider when analysing some of the more unusual descriptive strategies employed by reviewers, especially in those more semantically complex reviews explored in Chapter 7. While online fora like Fragrantica are extremely valuable sources of large amounts of data, and the language they contain merits detailed analysis, these caveats are important to bear in mind through the following chapters as specific linguistic examples are discussed.

After scraping the review data and forming the body of the corpus, the next step was to tag each word in the corpus according to the semantic domain to which it belonged, which would allow us to ascertain which semantic domains are the most common in the data as a corpus-driven starting point for analysis.

3.2 Semantic tagging

By analysing a semantically tagged version of the corpus, it is possible to build a picture of the semantic domains which make up the language of olfaction, and to begin to understand how olfaction can be linked linguistically to other semantic domains through figurative language. To annotate the corpus with semantic information I used the WMatrix platform (Rayson, 2009), a web-based corpus analysis tool which can be used to apply semantic and part-of-speech tags to the words which comprise a corpus. These tags can then be analysed to determine the semantic makeup of the corpus— which semantic domains are important with respect to the text(s) under analysis; which domains are over- or underrepresented compared to a standard reference corpus. I used WMatrix to automatically apply the USAS tagset to the Fragrantica corpus. USAS (UCREL [University Centre for Computer Corpus Research on Language] Semantic Analysis System) is a framework which facilitates the computational analysis of text from a meaning-based perspective through the application of a hierarchical tagset, originally developed by Wilson & Rayson (1993) and since developed and refined (Piao et al., 2004, 2005, 2015; Archer et al., 2002). This tagset was originally based on the Longman Lexicon of Contemporary English (McArthur, 1981), but has since been developed and revised. Tags consist of a letter denoting a single high-level semantic domain, for example X for Psychological Actions, States & Processes, followed by numbers which

denote any sub-levels of meaning. X3, for example, denotes the domain of the senses (a psychological process); while X3.1, a level deeper into the hierarchy, denotes specifically the sense of taste.

While the USAS framework is comprehensive and fine-grained enough to answer the questions posed by this thesis, particularly in relation to the senses, there are some limitations to its use here, especially when lexemes are polysemous or ambiguous. The main consideration is that certain words are frequently mistagged, in that they are given a category label which their linguistic co-text makes clear is not the domain to which the lexeme most appropriately belongs. This happens particularly often with the domain of COLOUR, which in the Fragrantica data the tagger has applied to words like *violet* (almost always the flower) and *orange*, which in the Fragrantica reviews almost always denotes the fruit. These mistaggings do not however pose a significant issue to the analysis in the body of this thesis for two main reasons. First, lexemes are given a primary, secondary and tertiary tag— this means that even if the primary tag is inaccurate, the particular search techniques employed mean that the accurate secondary or tertiary tag is still returned. Accepting these tags as they are generated, rather than attempting to correct the tags applied by the engine, means that consistency is maintained across all the semantic domains which are under investigation in the following chapters. Manually altering certain tags would introduce an imbalance into the data, but allowing them to remain consistently as the software inserted them means that any unconscious biases or errors by the hand of the researcher are not entered into the dataset and consistency is maintained. It would also be unlikely that any methodology for manual correction would be able to identify all erroneous tags, and some would nonetheless remain in the dataset in an inconsistent way. For these reasons—the presence of secondary and tertiary tags and to maintain consistency across the dataset—manual correction of erroneous tags was not attempted.

With the Fragrantica corpus semantically tagged and analysable by semantic domain, it was then possible to explore each of the 25 most frequent tagged categories using various search techniques, which will be outlined below. Using the information from these preliminary searches, it was possible to establish which areas of meaning are most important to the language of olfaction, and select those domains for deeper, fine-grained analysis in dedicated chapters of this thesis.

First, a simple frequency search was performed to establish which semantic domains

occur most commonly in the fragrance reviews. The frequencies of the 25 most common semantic domains in the Fragrantica corpus are shown in Table 3.1. The three most common terms occurring in the corpus which have been labelled with each tag are given to clearly illustrate what is meant by each tag category. 397 tags are present in the corpus all together, but most of these are not frequent enough to merit close analysis— 42 of these tags occur in the corpus more than 500 times, and 18 occur more than 3,000. The top 25 cutoff for analysis here was chosen because of this 'long tail' of the data— by analysing few very frequent tags very closely, it is possible to build a better picture of what is important to the language of olfaction than through analysis of a large number of infrequent tags.

Table 3.1 paints a complex picture both of the linguistic data in the corpus, and of how the tagset has been applied to it by the automatic tagging software. There are three types of tag here: tags which are frequent because the corpus is about olfactive language (most obviously SENSORY: SMELL), tags which are frequent because the corpus is made of reviews (EVALUATION) and tags which are frequent because they have a high frequency in English generally (PRONOUNS, GRAMMATICAL BIN). It is only this first type of frequent tag, that which is frequent in olfactive language, which helps to answer the questions under investigation in this thesis. The following pages will outline what each of the tags in Table 3.1 mean in the context of olfactive description, and will highlight the potential paths forward based on the information gathered through analysis of the tag frequencies. Issues related to mistagging will also be highlighted and addressed. Then in Section 3.2.1, I will establish the key domains in the Fragrantica corpus, which will form the basis of the fine-grained analysis in the main chapters of this thesis. The brief description of how each semantic domain is relevant to the corpus in the following pages will establish the structure of the main body of the thesis, which is arranged around which domains emerge as being important to the corpus following an analysis of their frequency and keyness.

Unmatched and grammatical terms— Z-tags

There is a very high frequency of unmatched items (Z99), which mostly corresponds to a high frequency in the corpus of technical fragrance terms and relatively niche ingredients specific to the world of perfumery, which are not included in the dictionary on which the tagging framework is based. The most frequent unmatched terms (i.e. those tagged Z99) in the corpus are given in Table 3.2.

Tag	Description	Frequency	Most frequent tagged words
Z5	Grammatical bin	84332	*the, and, a*
Z8	Pronouns	44708	*It, this, my*
Z99	Unmatched	20228	*oud, citrus, sillage*
A3+	Being	12444	*is, s, was*
X3.5	Sensory: smell	8439	*scent, fragrance, smell*
A13.3	Degree: boosters	5669	*very, more, really*
Z6	Negative	5361	*not, t, no*
Z1(m/f)	Personal names	5256	*de, parfum, homme*
M6	Location and direction	4142	*this, here, where*
A9+	Getting and giving: possessions	4107	*get, has, have*
A7+	Definite + modals	4025	*can, would, definitely*
N1	Numbers	3561	*one, two, 2*
F1	Food	3199	*fruity, coconut, honey*
A1.1.1	General actions, making etc	3150	*opening, spray, makes*
L3	Plants	3149	*floral, rose, florals*
O4.2+	Judgement of appearance	3067	*beautiful, nice, clean*
O4.3	Colour and colour patterns	2896	*vanilla, green, creamy*
T1.3	Time: period	2895	*hours, day, summer*
E2+	Liking	2462	*love, like, enjoy*
B1	Anatomy and physiology	2405	*skin, nose, body*
A5.1+	Evaluation: good/bad	2388	*good, great, better*
O2	Objects generally	2316	*bottle, thing, spring*
B4	Cleaning and personal care	2297	*perfume, perfumes, soapy*
X3.1	Sensory: taste	2249	*sweet, spicy, sweetness*

Table 3.1: 25 most frequent semantic tags

Word	Frequency
oud	342
citrus	303
sillage	268
woody	268
patchouli	197
gourmand	169
im	149
drydown	138
aventus	124
edt [eau de toilette]	111
musky	109
sandalwood	107
edp [eau de parfum]	105
dior	103
cozy	98

Table 3.2: 25 most frequent unmatched words

Of these 15 most frequent unmatched items, 13 are technical perfume vocabulary, with *im* (which appears in the corpus as apostropheless *I'm* in all cases) and *cozy* the only exceptions. The conventional British English spelling *cosy* is consistently tagged O4.1 (General appearance and physical properties) in all 10 of its instances in the corpus.

The other Z tags in the corpus, while frequent, encode lexemes with a grammatical function which do not contribute semantic meaning to the olfactive descriptions in which they occur and are not relevant to the questions under investigation here.

The category Z1, Personal names, includes mostly names of and parts of fragrance houses and perfume brands (*Dior*, *Tom* [Ford], and *Versace* are the most frequent). These terms do not form part of a piece of olfactive description—their presence is due to the methods by which the corpus was constructed, with the reviews sampled and taken from a perfume-centred website. There is also frequent mistagging in the Personal names category of descriptive terms like *rose* and *iris*. *Rose* and *Iris* can indeed be personal names—the name stock of English draws frequently on the names of plants, especially for feminine names— but

in the contexts in which those terms appear in this corpus, they would be more appropriately placed in the category L3, PLANTS.

The Z category of tags, then, while frequent, is of little use in the investigation of how English is used to encode olfactive experiences in language.

Miscellanea— B4 *Cleaning*, A5.1 *Evaluation*, B1 *Anatomy*

Some of the most frequent tags in the corpus do not carry significant semantic information, or have high frequencies as an artefact of the makeup of the corpus as a collection of reviews.

Tag B4, CLEANING AND PERSONAL CARE, is strongly dominated by *perfume(s)*, which comprises over 50% of the tokens with this tag. This is to expected given the source material of the corpus, and the tag would be much lower in the frequency list without the frequency of *perfume*. The tag does cover some meaningful and interesting olfactive description, where fragrances are compared to other personal care products like *shampoo* and *soap*, or to items from the domain of household cleaning like *laundry* and *detergent*, as illustrated by Examples 1 and 2:

(1) sort of out of shower/**shampoo** tone with some slightly sharp ginger top notes

(2) Opens up with white floral and freshly cleaned **laundry**

Category A5.1, EVALUATION—GOOD/BAD, is another category whose presence is more due to the source of the corpus data than the content of olfactive language which we are interested in here. The corpus is comprised of reviews, a text type in which a high frequency of evaluative terms is to be expected. There are, however, some words with interestingly high frequencies which do illuminate some aspects of olfactive language. *Cloying*, for example, is in the top 10 most frequent words with the A5.1 tag, and has strong sensory associations related to over-sweetness and the physical feeling and reaction which that flavour provokes. This is discussed in depth in Chapter 6, in the context of the complex relationship between olfaction and sweetness.

Quality is also in the 10 most frequent A5.1 words. Its frequency highlights again that the corpus is not only a collection of olfactive language, but also a collection of reviews of commercially made products which exist within an economic framework of manufacturing, sales, cost, and value for money, as well as a social framework of 'high/low quality' and 'luxury' products.

Category B1, ANATOMY AND PHYSIOLOGY, is another which contains little olfactive language but has a high frequency due to the source material for the corpus. B1 is used to tag lexemes like *nose* and *skin*, both of which are essential to the experience of wearing and encountering perfume. (*Nose* is also one of the clearest examples of metonymy in the world of olfactive language: those who compose perfume formulae are professionally known as *noses*.) There is also some metaphorical use of bodily terms in olfactive description, where perfumes can have *DNA* and *heart notes*. These patterns are discussed in Chapter 4.

Smell— X3.5

It is perhaps unsurprising that the most frequent semantically meaningful category in the corpus (i.e. excluding Z-tagged grammatical lexemes, and the category of BEING) is X3.5, tagging lexemes related to the sensory domain of smell. While 8,439 individual tokens are tagged with the category X3.5, only 25 distinct types are recorded in the corpus, listed here in descending order of frequency:

Scent, fragrance, smell, smells, fragrances, smelled, scents, smelling, aromatic, smelt, whiff, whiffs, scented, air, freshener, fragrant, musty, aromatics, stinks, perfumed, smelly, stink, odour, reeks, stank

This very low type:token ratio reflects the relative paucity of dedicated olfactory language in English discussed in Chapter 2, and highlights a central problem investigated by this thesis: while almost all of the language of the corpus is inherently *about* smell, a large majority of the vocabulary comes from non-olfactive semantic domains. What, then, is the linguistic relationship between olfaction and the semantic domains on which the language of the corpus draws? This relationship is explored in detail in Chapter 6.

Food— F1

Words tagged with F1, FOOD, are very frequent in the corpus. FOOD is one of the most important source domains in the corpus for olfactive description, and is explored in depth in Chapter 5.

As is inevitably the case with categorisation in English, there are several edge cases represented in this data where words could be categorised in multiple ways. In some of these cases the tagging tool applied a primary and secondary domain tag, but in most cases only one tag is attached to the ambiguous term. This is best exemplified by the words which have been given the L3 (PLANTS) tag, which would be equally well, if not better, suited to

field F1 (FOOD), such as *bramble*, *berries*, *cloves* and *thyme*. Food and plants exist in close proximity in semantic space— these are all examples of edible plants and parts of plants which are used as food, and it is unclear whether their edibility or their plantness is the salient aspect in the context of their odour. This ambiguity is discussed in depth in Chapter 5, which is dedicated to discussion of the linguistic and semantic relationship between food, plants and smell. While it is theoretically possible to manually correct such tags so that, for example, all berries including brambles are tagged as FOOD, for reasons of consistency, any tags which are ambiguous were left as they had been inserted by the automatic tagger. Adopting this methodology allows for a consistent comparison of results from which more subjective interpretations can be drawn in the more qualitative analysis which follows in the later chapters of this thesis.

Plants— L3

Another very frequent, and semantically significant, category represented in the corpus is L3, PLANTS. These plant terms are mainly identifiers of specific perfume components or ingredients, usually flowers, describing particular odours in terms of their source with varying degrees of specificity, like *rose*, *blossom* and *jasmine*. These PLANT-related terms pose the same questions about ambiguous tags as raised by the FOOD words discussed above. Because of the ambiguity of the edge cases between FOOD- and PLANT-tagged words, Chapter 5 will discuss both in sequence.

Other senses

Categories describing senses other than olfaction are represented in the corpus with a high frequency. Most frequent is language relating to vision, especially colour, and taste. There is some presence of language related to texture and touch. Language related to hearing mostly occurs with words from the specific domain of music.

The domain represented by the tag O4.3 (COLOUR AND COLOUR PATTERNS) is a particularly interesting semantic domain as it appears here in an olfactive context. Excluding category X3.5 (SENSORY: SMELL), which contains very few discrete lexemes and none with much of a descriptive or evaluative aspect, the COLOUR tag is the most common tag related to a sensory domain. By some distance, the most common word in the corpus with this tag is *green*, which, like the words in the FOOD and PLANT categories above, can be used to describe both

to analytically describe particular odour-components of a fragrance and also to describe perfumes in a more general, category-level sense.

Green is the only colour term which is used to describe odour directly in the corpus. That is, something can smell *green*, but other colours do not generally appear in this specific syntactic construction. *White* is used in the phrase *white floral*, but *black*, *pink* and *red* appear only in multi-word expressions denoting component odours like *black ink*, *pink pepper* and *red amber*— fragrances do not *smell red* in the way they can *smell green*.

In addition to these hue terms, there are also a number of words in the corpus with this tag which do not denote hue but are related to other aspects of visual sensation, especially brightness and light, such as *bright*, *glow* and *fade*. More of these words are present with the tag W2 (LIGHT), which also includes terms related to dark and darkness.

Colour is discussed in the context of the linguistic relationship between olfaction and sight in Chapter 6, and terms to do with brightness and light are discussed in Chapter 4.

Mistagging of the COLOUR category is frequent. For example, *violet* has been consistently given the COLOUR tag, but the collocations alongside each example make it clear that the more appropriate category is L3, PLANTS. Similarly, the same tag has been applied to *orange* consistently despite the fact that a large majority of instances of *orange* refer to either the fruit or to the orange blossom flower.

Tag X3.1 (SENSORY: TASTE) is also included in the top 20 most frequent tags in Table 3.1, suggesting a link between the domains of odour and taste beyond the fact that foodstuffs are the source of certain odours. The majority of these instances are basic taste sensations *sweet*, *spicy*, *salty* and *bitter*. Given the close physiological links between the senses of smell and taste, it is not surprising that words from the semantic field of taste are also used to describe odours. This is discussed in detail in Chapter 6, where the relationship between olfaction and the other senses is analysed in depth.

A particularly interesting facet of the automatic tagging is that the word *aroma*, which appears intuitively to be a word central to olfactive vocabulary, has been tagged in most instances with this TASTE label. This again highlights the closeness in semantic (and physiological) space between the senses of taste and smell— these domains of perception are very closely linked, and share a degree of lexical overlap. This will be discussed in more detail as the corpus evidence is analysed in the following chapters: the degree of lexical (and conceptual) overlap between sensory domains is a key aspect of one of the main contentions

of this thesis, that the traditional five senses generally form a contiguous semantic domain of perception.

The third non-olfactory sensory domain represented in the corpus, O4.5 (TEXTURE), is one whose connection to odour is less immediately clear. The most common word in the corpus here is *soft*, but a variety of other textural descriptors are also used, including *powdery*, *smooth* and *waxy*.

There is an apparent pattern here whereby the paucity of vocabulary associated directly with the semantic field of olfaction is alleviated by adopting terms from other sensory fields. Vision, the most dominant sense, makes up a majority of these cross-modal uses. Taste, which is physiologically close to olfaction, also has a significant role. This relationship, and how far this cross-modal use of language can be considered to be metaphorical, is the focus of Chapter 6.

3.2.1 Key semantic domains

Frequency data alone does not show a full picture of how olfactive language differs from general, day to day English. Now that I have established what the most frequent semantic domains in the corpus are and outlined how they relate to the language of olfaction, we can establish how *important* they are to the language of olfaction by investigating the keyness of each tag compared to a reference corpus, in this case the written component of the 1993 British National Corpus (BNC). This follows the methodological framework laid out by Rayson (2008), who fruitfully applied the concept of key domains to political language. This methodology works by applying keyness statistic calculations to semantic tag frequency lists, and allows the characteristics of whole texts (in this case the Fragrantica review dataset as a whole) to inform more fine-grained analysis by informing the researcher which linguistic features may merit further analysis (Rayson, 2008, p.519). This data-driven approach allows the analysis to remain firmly rooted in the language of the corpus, and allows the corpus data itself to inform the researcher which domains and lexical items should be investigated in depth.

Table 3.3 uses keyness figures generated by Wmatrix by comparing the Fragrantica corpus to a sample of the written component of the BNC as a reference corpus. The presented figures are measures of log-likelihood, and are well above the threshold of statistical significance. This gives a compelling overall idea of the semantic domains which characterise the corpus

Word	Frequency	
Tag	**Description**	**Log likelihood**
X3.5	Sensory: smell	13133.29
X3.1	Sensory: taste	3055.05
A13.3	Degree: boosters	1883.71
O4.2+	Judgement of appearance	1845.04
E2+	Like	1536.49
B4	Cleaning and personal care	1517.31
L3	Plants	1355.85
F1	Food	1102.10
W2	Light	615.51
A3+	Existing	603.88

Table 3.3: Key semantic domains, compared to BNC written component

and which we use to describe olfactive experiences—the categories listed in Table 3.3.

Table 3.3 excludes the Z category of semantic tags, which as established in Section 3.2 denote words with a grammatical function like pronouns and negatives, as well as words which the tagging engine has failed to match with a category. These have been excluded from the table because they do not provide information on the semantic content of the corpus, and their omission better facilitates a clear comparison of the other categories' keynesses.

The categories in the above tables can again be separated into two categories of their own: those which are frequent because the corpus contains text about fragrance, and those which are frequent because the corpus is made of one specific text type, the consumer review. Two of the tagged categories (E2 Liking and O4.2 Judgement of appearance) contain types of words which we would expect to find in consumer reviews. Liking is used to tag (e.g.) *like*, *love*, and *enjoy*, and Judgement of appearance tags words like *beautiful*, *nice* and *lovely*. These evaluative terms are describing the fragrances as a consumer product rather than describing the olfactive experiences themselves, so will not be part of the analysis in the following chapters.

Having considered the frequencies of each semantic domain which is important to the corpus in Section 3.2, and the keyness of certain semantic domains present in the corpus in Section 3.2.1, it is now possible to build a final list of domains which are of prime semantic

relevance to the olfactive language which comprises the corpus. It is these domains which will provide the structure of this thesis, and which will be studied in-depth in the following chapters. Excluding those domains which do not relate to the olfactive component of the language of the corpus (like EVALUATION and PERSONAL NAMES), we are left with 11 categories which are ripe for detailed analysis and investigation in Chapters 4, 5 and 6 of this thesis. Namely, these domains are CLEANING AND PERSONAL CARE, EXISTING, LIGHT, COLOUR, ANATOMY, TIME, JUDGEMENT OF APPEARANCE, FOOD, PLANTS, SENSORY: SMELL, and SENSORY: TASTE. The semantic overlaps and commonalities between these domains, and their relationships to the sense of olfaction, are what informs the way this thesis is structured. First, in Chapter 4, I will investigate how olfactive language relates to the key domains which are semantically most distant from the domain of smell: CLEANING, JUDGEMENT OF APPEARANCE, ANATOMY, LIGHT, EXISTING, TIME and COLOUR. Then, moving closer in semantic space to the senses, I will analyse the related (and frequently overlapping) domains of FOOD and PLANTS in Chapter 5. Chapter 6 will then discuss the senses directly, and how language from within the domains of TASTE and SMELL is used in the corpus to communicate olfactive experiences. In order to build a more complete picture of how sensory language works and operates cross-modally across sensory modalities, Chapter 6 will also discuss language related to the remaining senses of hearing, touch and sight. This heavily corpus-driven analysis in these three chapters is followed by a slightly different, more qualitative approach in Chapter 7, which is dedicated to an investigation of specific examples from the corpus which employ certain narrative-related elements like character and setting to facilitate olfactive description.

The next chapter begins the analytical body of this thesis, which is fully grounded in corpus data. This chapter has explained how the data was collected and compiled into a usable corpus, and the following pages interrogate that data in order to build a picture of how English speakers use language to communicate the kinds of complex olfactory experiences represented in the Fragrantica data. The following chapters show speakers using a range of linguistic strategies to communicate this complex sensory information, and offer useful insight into how sensory experience is conceptualised semantically. They will also provide important evidence for how sensory modalities are related to each other in a linguistic sense, and offer some insight into the semantic processes which motivate the linguistic choices of the reviewers represented in the corpus.

Chapter 4

Non-sensory Domains

This chapter will explore the linguistic relationship between the sense of olfaction and those semantic domains which are most distantly related to it. By analysing this type of language, it is possible to begin to understand the words and linguistic strategies used by reviewers to describe their olfactory experiences, the key question asked by this thesis as described in Chapter 1. Because many of the domains explored in this chapter do not have distinct olfactive identities, much of the analysis in the following pages will be performed within the framework of associative meaning, as outlined by Leech (1981). This is one of the primary linguistic strategies used by reviewers to communicate olfactive meaning, and is well illustrated by the examples in this chapter which contain language from less directly sensory semantic domains—the referents which these descriptions rely upon often do not have clear sensory components, so much of their contribution to sensory communication is inherently associative and rooted in experiential knowledge. This represents a key semantic process by which the use of words from the particular domains analysed in this chapter is motivated.

From the lists of frequent and key domains outlined in Chapter 3 (Tables 3.1 and 3.3), this chapter will explore Appearance, Time, Anatomy, Cleaning and Personal Care, Light, Existing and Colour and colour patterns. While colour is a visual domain which is experienced through the sense of sight, it will be discussed in this chapter rather than in Chapter 6 (which deals with the linguistic relationship between olfaction and the other senses) for two reasons— first, the domains covered in Chapter 6 are those which in the structure of the USAS tagset used for the foundational semantic analysis of the corpus are strictly within the domain of the senses, i.e. the X-tagged domains of Sensory: sight, Sensory: smell, etc. Maintaining this same separation in the structure of this thesis allows for a deeper and clearer

discussion of strictly sensory language in Chapter 6, which is a complex topic that necessitates careful analysis. Reserving discussion of the domain of colour for this present chapter, rather than including it alongside discussion of other words associated with the modality of sight in Chapter 6, means that the complex discussion of directly sensory language in that chapter can remain focused within the strict limits of the complex and overlapping sensory domains. The second reason for including the domain of colour in this chapter is that colour and colour patterns have commonly recognised and rich associative and figurative meanings, as well as their literal sensory denotations. *Red*, for example, does not only denote the colour itself, but also has associations with intense emotional states like anger and love; while a person who is said to be *blue* is more likely to be depressed than literally blue in colour. Discussion of such associative meanings is better facilitated by the context of this chapter, which, as the following sections will show, deals with language which is heavily reliant on associative and connotative meaning.

Some of the semantic domains discussed in this chapter are important to the language of the corpus not because of their relationship with the language of olfaction, but rather because of their relationship with the language of the text type which comprises the corpus: the consumer review. Two of the most most frequent words in the corpus within the domain of Appearance, for example, are *good* and *nice*— evaluative adjectives which are used to express the reviewer's opinion on the fragrance, rather than to communicate the specific nature of an olfactive experience using language. The domain of Existing displays a similar pattern— the domain is significant in the context of the corpus because of the pattern of syntactic structure of the consumer review. The text type lends itself to a high frequency of descriptive sentences which are structured with simple verbs like *is*, like in examples 3 and 4.

(3) The opening **is** blaaa but the drydown **is** so yummie.

(4) this **is** potently juicy sweet almond/cherry

This unusually high frequency of *is* compared to a reference corpus (*is* occurs approximately twice as often in the Fragrantica corpus than in the written BNC) is much of the reason why the domain of Existing overall has significance to the corpus here. It is because of the specific structure of the particular text type, rather than any semantic elements of how users are using language to communicate their olfactory experiences.

While these domains have certain aspects which are not related to the aims of this thesis—

to explore how complex sensory experiences are put into words— they do contain some language which is used to express olfactive experience. APPEARANCE for example includes the words *fresh* and *sensual*, which are not simple evaluative adjectives like *nice* and *good*, and do contain significant descriptive meaning. EXISTING contains *appear* and *disappear*, two words which point towards interesting patterns of how the presence (if not the precise nature) of olfactive experience is verbalised.

The following sections will explore each of these domains— APPEARANCE, EXISTING, TIME, ANATOMY, CLEANING AND PERSONAL CARE, LIGHT and COLOUR AND COLOUR PATTERNS— in turn. Each section will give the most frequent words in the corpus from each domain, highlight relevant patterns of collocation, and discuss using examples taken from the corpus what those patterns mean in terms of the cognitive and linguistic relationship between the sense of olfaction and the domain in question.

A key theoretical concept in the analysis of the domains included in this chapter is Leech's (1985) concepts of associative and connotative meaning. Leech defines connotative meaning as 'the communicative value an expression has by virtue of what it *refers to*, over and above its purely conceptual content' (Leech, 1981, p.12). This concept is key to understanding how domains seemingly so semantically distant from the sense of olfaction as the ones under investigation in this chapter, like the domain of TIME, can be used to communicate a sensory experience. A further important point, also raised by Leech in his discussion of connotative meaning, is that such meaning can vary between individuals based on their own thought processes, experiences and biases. This adds a layer of complexity to olfactive descriptions which employ connotative meaning such as those in the examples analysed in this chapter: it is likely that the olfactive associations held by the reviewer do not necessarily overlap entirely with those held by the reader trying to 'picture' the fragrance.

Leech also notes that connotative meaning is not unique to language, but rather can be invoked by other systems of communication such as music and visual art. It follows from this assertion that connotative meaning can also be invoked through the medium of fragrance— and by using language to evoke the same connotative meaning, the nature of a particular olfactive experience can be communicated.

The importance of associative meaning in communicating olfactive experience is particularly apparent in the particular language explored in this chapter. Because words within the semantic domains explored here have referents which do not have a significant olfactive

component, the descriptions which use these words must necessarily rely on association and connotation to convey olfactive meaning. This stands in contrast to the types of words (those to do with food, plants and the other senses) which will be explored in Chapters 5 and 6, which can make direct and experiential olfactory comparisons to things like *cherries* or *lemons*. In the following sections we will see that some domains explored in this chapter rely on associative meaning more than others— domains which do have an olfactive facet like Cleaning and personal care contain more direct comparisons than those like Light, which have none— but that these domains, distant as they are in semantic space from directly sensory experience, must 'stir up' experiential knowledge in order to communicate sensory meaning through association and connotation. By doing this, these descriptions can draw on broader sensory experiences and the olfactive associations that readers have with them. This pattern of usage, whereby whole, multi-modal sensory experiences are invoked in order to communicate a specifically olfactory experience, highlights the closely and densely interlinked nature of the semantic network which underpins sensory meaning.

4.1 Corpus analysis

This section will use corpus methods to analyse as a whole the language of the corpus which contains olfactive description based on the semantic domains of Appearance, Existing, Time, Anatomy, Cleaning and personal care, Light, and Colour and colour patterns. These are the areas of meaning which were highlighted in Chapter 3 as those which are significant to the language of the corpus, and which are semantically most distant from the sense of smell. The following pages will discuss each of these domains in turn, and analyse how olfactive descriptions which rely on those domains are employed in the corpus through collocational analysis and close consideration of particular examples from the corpus. These will be full contextual examples rather than KWIC-style concordance lines— providing the full context of the review in question allows for a more informed analysis with better access to the reviewer's intended meaning. Following this, Section 4.2 will discuss the findings of that analysis, with a particular focus on how olfactive experiences can be communicated through descriptions which rely on source domains (like Time) without a major sensory component, largely through the conveyance of associative and connotative meaning.

4.1.1 Appearance

The domain of JUDGEMENT OF APPEARANCE is one which does not generally relate to olfactive perception specifically, but rather consists mostly of words in the corpus which evaluate the fragrances under review as consumer products, and whether smelling them is broadly a pleasant or unpleasant experience. This includes words like *good* and *nice*, which are used to specifically describe the olfactive experience as well as the fragrance as a whole product, but which do not carry semantic information about the nature of the fragrance beyond their evaluative meaning.

Some words in this category, however, are used with meanings which communicate more than straightforward evaluation. These are words which employ complex networks of meaning and which reviewers use to play on our associations and experiential knowledge around appearance (and in particular physical attraction) in order to communicate detailed information about their olfactive experiences. The frequencies of the words in the corpus tagged with this domain with a frequency greater than 25 are given in Table 4.1. Words which are purely evaluative in meaning (e.g. *good. bad*, *awesome*) are not included in this table because they are not used to communicate specific olfactive information, and would clutter the picture of how words within the domain are used to describe olfactory experiences— it is the descriptive olfactive language which is important in this analysis, not the subjective, evaluative response to the olfactory experience.

There are two main categories of word which can be seen in Table 4.1. The first is words which are to do with positive evaluations of appearance, and especially attraction: *beautiful*, *gorgeous*, *pretty*, *sensual*, *stunning*, *attractive*, and *seductive*, and perhaps *appealing*. The second is words to do with class and (perceived) social status: *cheap*, *classy*, *elegant*, *sophisticated*, *refined*, *grand*, and *luxurious*.

In day to day usage, most of these words (especially those to do with attraction) are generally associated with people, rather than with fragrances. When they are used in the context of olfactive description, we often see reviewers using the image of a fictionalised person to describe the fragrance— exploiting the associative meanings that we have of an *attractive person* in order to communicate something about the olfactive experience of the fragrance. These ideas, especially those of sexual attraction and 'high-class', are concepts which are closely tied to the world of fragrance through marketing: fragrances are often marketed through the use of, for example, advertising strategies involving sexualised imagery

Appearance word	**Frequency**
sweet	1065
fresh	515
nice	463
beautiful	411
warm	313
clean	268
sweetness	238
lovely	201
cheap	166
gorgeous	150
pretty	90
classy	95
elegant	95
cool	94
sweeter	89
delicious	75
sophisticated	67
sensual	48
beautifully	44
refined	44
appealing	39
grand	31
dusty	31
stunning	30
luxurious	29
lush	28
attractive	28
seductive	27
divine	26
angel	26

Table 4.1: Frequency of words within the domain of Appearance with frequency >25

of the attractive celebrities whose names are attached to certain fragrance brands (see Reichert et al. (2011, 2012)).

Beautiful is of course an extremely subjective term, and also one which is broadly evaluative rather than descriptive in nature. When a reviewer describes a fragrance as *beautiful*, they are not providing us with much in the way of descriptive information about the nature of the fragrance, just about their subjective reaction to it. It is also often used alongside more descriptive words, in an evaluation of how well those identified notes are employed, as in example 5. In other cases, like example 6, *beautiful* is used in the context of a description of a beautiful person who is then used as a point of comparison to describe the fragrance.

(5) **Beautiful** spicy sweet vanilla woody dry down.

(6) It's what I imagine a **beautiful** woman who committed bloody murder might smell like

Examples like example 6, which rely on a description of a person or some element of characterisation to communicate olfactive perception, are explored in detail in Chapter 7. Usage like in example 5, in which *beautiful* is used in conjunction with more directly descriptive terms, is an important illustration of how full multisensory construals can be formed from descriptions of purely olfactive stimuli. A *spicy sweet vanilla woody dry down* contains all the actual descriptive olfactive information communicated by the sentence, but the inclusion of the word *beautiful* provides a broad 'colouring' to the olfactive image which allows the reviewer to more clearly put across the holistic nature of their sensory experience as one which is ultimately well-constructed and pleasurable. Even if the reader's idea of a *beautiful* fragrance is different to the reviewer's, the inclusion of the word leads the reader to combine the disparate olfactive elements (*spicy, sweet, vanilla, woody*) in a particular way to form a particular olfactive construal. *Beautiful* is of course not specific to the description of people, like many of the other words in this category: an artistic endeavour in any field, including the world of fragrance, can be described as *beautiful* without raising any questions about the cognitive-linguistic processes motivating its use, and without necessitating a transfer of meaning from the domain of Appearance to a specifically sensory domain.

Other words to do with specifically attractive aspects of the domain of Appearance are used in the language of the corpus to describe fragrances using more directly descriptive language. Of the words listed in table 4.1, *sensual* is perhaps the clearest example of a word within the subdomain of sexual attraction which is used to directly communicate an aspect of

an olfactive experience, as in examples 7 and 8.

(7) Tobacco in the air, alcohol pouring freely, it's a little **sensual** and hedonistic. Something out of an F. Scott Fitzgerald short story.

(8) We then have a warmer and more **sensual** smell, which for many starts to resemble a chocolate accord.

Sensuality does not have a specific odour profile, and thus cannot be used as a literal point of comparison in sensory description, and must necessarily rely on connotation. By invoking the concept of sensuality, the reviewers who wrote examples 7 and 8 are relying almost entirely on associative meaning to do with sensuality. The actual olfactive content of the description is established through direct comparison with olfactive referents (*tobacco*, *chocolate*), but the tone of the sensory experience as a whole is established with a broader term, which relies on the experiential associations readers carry with sensuality.

We can see a similar pattern when we consider other words which are firmly within the domain of attraction, and which do not carry a broader evaluative meaning like we saw with *beautiful*. The word *hot* is generally used in the language of the corpus with its conventional, temperature-based meaning— its three strongest collocates are *summer*, *weather* and *day*— but it is used with the sense of sexual attraction 6 times across the corpus. There is no gender bias in how fragrances are described as *hot*: they are compared to *hot women/girls* as often as to *hot men/boys*. *Pretty*, on the other hand, shows an association in the corpus data with femininity. It collocates with the word *feminine*, and with *floral*, a style of fragrance generally marketed towards women.

To understand how the fragrances under review can smell *hot*, *pretty* or *seductive*, we must draw on associative meaning. When a fragrance is described as such, we invoke associations of what attractive people are like according to our own experiences. The images evoked with this usage are not only olfactory— many different facets of attraction are called to mind, and the overall *perception* of attraction is associatively applied to an olfactive referent. This process hints at a densely connected network of perceptual meaning, whereby associations and meanings which are most closely associated with one sensory modality (in this case mostly the visual) can be applied with strong effect to describe experiences in another modality, olfaction.

These descriptions highlight the issue that the degree to which such connotative meaning

overlaps from individual to individual can be uncertain and unclear. Attraction and perceptions of beauty are inherently personal and varied, and the perception of the reviewer likely does not overlap entirely with that of the reader. It is the impressionistic *response* to this perception which is important in the description: the reviewer and the reader may have differing conceptions of what is *hot*, but the effect of the concept of *hotness* remains the same in the understanding of the olfactive description, and can be used to carry some degree of this 'colouring' of olfactive meaning.

We can observe a similar pattern with *classy*, *elegant*, *sophisticated* and *cheap*. None of these concepts have definitive, clear, specific smells associated with them. Rather, when a fragrance is described as being *classy* or *elegant*, like in example 9, the description is drawing on the ideas of wealth and social status, and the associations we have with those concepts in an olfactory, sensory domain.

(9) You can't go wrong with this one, a **classy**, **elegant** fragrance for any occassion

In example 9, no specific olfactive information is offered. The reviewer is relying entirely on associative meaning to communicate their olfactive experience here— the description leads us to imagine the sensory associations we have with *class* and *elegance*, and to form an understanding of what this particular fragrance smells like based on those.

The examples to do with the domain of Appearance analysed in this section illustrate an important point about the nature of olfactive language. An olfactive experience can often be described in terms which have no clear relationship to olfaction, and which appear to carry no direct olfactive meaning. Those descriptions therefore must rely entirely on associative meaning. But that associative meaning does not itself have to be olfactive— when a reviewer invokes the associative meanings of *elegance* or *sensuality*, they are not only invoking any olfactive associations but also visual and auditory associations what we have with those concepts. Each of these sensory associations inputs to the formation of an associative, olfactory understanding, even if no directly olfactive element is present. This suggests that the senses form a mostly contiguous domain of perceptive experience in a cognitive-linguistic context, and sensory construals in one modality (in this case, olfaction) can be formed using semantic inputs from other modes of perception, like the visual.

Many examples from the corpus which make reference to appearance, and in particular sexual attraction and to wealth and social class, do so though the description of an imagined

person to whom the fragrance is compared. Examples like this are discussed in depth in Chapter 7, alongside other descriptive strategies which involve narrative-based elements like character and setting.

4.1.2 Being

The domain of BEING occurs very frequently in the corpus. This is mostly because of the very high frequency of the verb *to be*, which occurs disproportionately often in the type of descriptive language of which the corpus is comprised. The fact that this particular domain occurs so much more frequently in the Fragrantica corpus compared to the written component of the British National Corpus (as seen in Table 3.3 of Chapter 3) does not offer much information with regards to the actual semantic content of olfactive language, but rather is a feature of descriptive writing more generally— *is* will of course occur more often when the nature a particular item is being described and evaluated, compared to, say, the narration of the events of a novel, which contains descriptions of people doing various things other than *being*.

Table 4.2 shows the frequencies of the words tagged within the domain of BEING. To better facilitate a clear analysis, Table 4.2 excludes forms of the verb *to be*.

There are three words in Table 4.2 which are relevant to the exploration of how this semantic domain of BEING is used to communicate olfactory experience: *real*, *appear* and *disappear*. These are illustrated in examples 10, 11 and 12:

(10) Again im not the biggest fan of cherry in frags because it's not **real** cherry juice it's synthetic, and id rather eat & smell **real** cherries

(11) The base of patchouli and musk does not **appear** on my skin at all.

(12) This has by far the weakest longevity of any perfume I've ever tried. Truly a sad experience to see such a beautiful scent **disappear** so quickly.

The use of *real* in the language of the corpus hints toward the complex relationship between how objects are rendered through olfaction in fragrance, and how these olfactive representations relate to the real-world items they are derived from or aim to imitate. Impressionistic or 'artificial' representations of a real-world olfactive referent (like the cherries in example 10) are perceived differently from more true-to-life (often termed *photorealis-*

Being word	**Frequency**
real	77
life	49
present	46
wait	41
live	38
presence	33
available	24
realistic	23
disappears	22
waiting	21
experienced	20
appears	16
experience	15
situation	15
appear	14
event	11
disappeared	10

Table 4.2: Frequency of words within the domain of Being, excluding forms of *to be*

tic) renderings. Unreal, artificial or synthetic renderings are often reviewed negatively in the corpus (like in example 10), reflecting a greater prestige of real or 'authentic' fragrant components. *Appear* and *disappear* indicate interesting things about how the presence or absence of smell is conceptualised. *Appear* and *disappear* are related to the sensory domain of sight— the core aspect of something which has disappeared is that it can no longer be seen, and this meaning is figuratively applied in these examples to an odour which can no longer be perceived through olfaction. The extent to which this usage is actually figurative is questionable— it is perhaps more likely that *(dis)appear* has a broader denotation beyond the strictly sight-based, and literally describes something which can no longer be perceived by any of the senses, not just sight. A full discussion of the extent to which this kind of apparently cross-modal sensory language can be said to be figurative is offered in Chapter 6, where the linguistic relationships between the different sensory domains are considered in detail.

4.1.3 Time

Language to do with time and the passing of it is used in interesting ways in the corpus, especially in relation to associative and connotative meaning. Much of the language in this domain is not used within the specific context of olfactive description— that is to say it is not used to communicate the qualitative nature of a sensory experience— but rather is used to describe the longevity of a fragrance, how long it lasts on the skin before becoming imperceptible to the nose. While this describes one aspect of the olfactory experience (its limits), it does not relate to the kind of description which relates to the aims of this thesis— it does not describe *what* is perceived through olfaction, just *for how long* that perception persists. Some words within the domain of TIME, however, do lend themselves to this kind of description, especially through meanings associated with particular times of day and year. Table 4.3 shows the frequencies in the corpus of words within this domain.

Some of the words in Table 4.3 are again present not only because of their frequency within olfactive descriptions, but more because they relate to aspects of the fragrance review as a text type. Part of the nature of a fragrance as a product, as well as its olfactory component, is how long that olfactory component (or parts of it) remains perceptible after use— an expensive perfume may be well-received as an olfactive composition, but if it has a short longevity and can only be perceived for a *few minutes*, this is something a reviewer is likely to mention. In cases such as these (illustrated in examples 13 and 14) the words from the

TIME word	Frequency
just	1279
hours	520
day	410
time	365
long	284
summer	237
years	204
night	187
winter	185
minutes	158

Table 4.3: Frequency of words within the domain of TIME

domain of TIME are not being used to communicate any specific, descriptive information about the nature or qualities of the sensory experience, but instead give information about the perfume as a product.

(13) it doesn't last much longer than five **hours**, especially on very hot days

(14) The citrus really only lasts a couple of **minutes**

Because reviewers often evaluate the longevity of a fragrance, saying that the fragrance *only lasted a few hours* or a component of it *was gone in a couple of minutes*, these words to do with time occur in the corpus with a relatively high frequency. These aspects of the review are again to do with the evaluation of the fragrance as a whole product, rather than an attempt to accurately convey and describe an olfactive experience. This point of view is strengthened when collocation data is considered: performing a collocate search for *hour** gives words like *longevity* and *lasts* among the most likely collocates. Looking more closely, it is possible to see an interesting pattern which relates to how the perception of smell is conceptualised: the words *fades* and *disappears* occur alongside both *hour** and *minute**. These words indicate some degree of cross-modal correspondence between olfaction and the domain of sight, as discussed earlier in this chapter, and further evidences the contention of this thesis that sensory perception is generally conceptualised within a contiguous domain of perception.

Of the words in Table 4.3 which are not used to describe a fragrance's longevity are useful

in olfactive description because of their associative and connotative meanings. *Summer*, for example, does not have a distinct or specific clearly defined olfactive identity, and reviewers who use the word in their descriptions of fragrance are relying on our shared experiential knowledge of summer, and the associations we have between summer and those things linked with it that *do* have an olfactive component, in order to communicate their sensory experience linguistically.

Most instances of *summer* (and of the other seasons[1]) in the corpus are used to specify that a certain fragrance would be well suited to being worn during that particular season, like in examples 15 and 16:

(15) An almost perfect **summer** scent here. Uplifting, radiant and smooth

(16) a perfect fruity floral for **winter**, a very cold snow & ice on the ground perfume

Some descriptions involving words to do with time, again especially the seasons, use those words to directly describe the qualitative nature of a fragrance. The effectiveness of these descriptions relies exclusively on associative meaning: seasons do not have inherent smells, and any olfactive description which relies on them to communicate sensory meaning necessarily relies on the connotative aspects of the word. In example 17, this type of description can be seen in its most basic form: the fragrance simply *smells like summer*.

(17) Instead this **smells like summer**. It's bright, playful and a little sensual

What summer smells like is not consistent from person to person: our experiential knowledge of summer varies. Summer can perhaps be said to have a clearer olfactive component than the various terms to do with Attraction explored above. The mention of summer evokes memories of certain specific smells, depending on one's background and experiences— perhaps the smell of suncream, or the seaside, or of freshly mown grass.

But there are other, non-olfactory associations which we have with the seasons, and with different times of day. The most obvious of these are to do with temperature and light: summer and daytime are (generally) bright and warm, where winter and night are

[1]Summer and winter are the only fragrances present in Table 4.3 because the words *fall* and *spring* are not tagged within the Time category— *spring* is tagged as Objects generally, and *fall* as Movement. *Autumn* is always tagged as a season, but is very infrequent in the corpus compared to the other seasons because of Fragrantica's US bias.

dark and cold. These are clear sensory associations which do not have specific olfactive components (although a crisp, cold winter day does smell differently to a warm summer one). The reviewers who employ the seasons in their description are drawing upon the full breadth of sensory (and cultural) associations we have with the seasons, and exploiting the dense semantic network of interconnected perceptual meaning in order to communicate effectively their olfactive experiences.

There is also an element of fashion seasonality at play in these particular examples. For some people, their choice of fragrance varies with the seasons— the Fragrantica site collects user-generated data on whether a particular fragrance is best suited to spring, summer, fall or winter. Some of the usage of the seasons in a olfactory-descriptive context in the corpus is related to this, in that a *summery fragrance* may not necessarily be one which has specific sensory associations with the experience of summer, but rather which is most appropriately worn in the summer months.

4.1.4 Anatomy

The domain of ANATOMY is used in the language of these fragrance reviews in several different ways.

The most obvious (and perhaps the most semantically complex in the context of the corpus) anatomical term used in the language of olfaction is the *nose*. Smells are perceived entirely through the nose, and the word consequently has an important place in how we talk about our olfactive experiences. The word has an especially important place in the technical language of perfumery, in that those who make perfumes are metonymically referred to as *noses*.

One of the most interesting constructions around anatomical terms in the corpus, and specifically around the word *nose*, is the expression *nose blind*. This is a clear example of cross-modal figurative language, where *blind*—a word specifically from the sensory modality of sight— is used to describe a lack of perceptive ability in the modality of olfaction. The term is typically employed to describe the situation in which a wearer of a fragrance has gotten used to the smell and ceases to perceive it themselves, despite the fact that is it still perceptible by others. This usage is illustrated in examples 18 and 19.

(18) lasts longer than you think as you get **nose blind** but dont be fooled people can smell you

Anatomy word	Frequency
skin	785
fresh	515
nose	261
body	197
slight	95
dna	89
iris	77
wrist	76
hand	58
back	50
arm	45
head	43
balance	41
face	40
hands	40
hair	36
shit	21
neck	19
bottom	18
chest	15
eyes	14
mouth	13
feet	13
sweaty	13
breath	13
born	13
pee	12
sleep	11
sweat	11
blood	11

Table 4.4: Frequency of words within the domain of Anatomy and physiology

all the time

(19) Longevity is supposedly beastly but I get **nose blind** after a couple of hours which is unfortunate

An interesting point around the usage of *nose blind* is that in a more conventionally formed metaphorical construction, we might expect the word *blind* to be used on its own, offering a transfer of meaning from the source domain of sight to the target domain of olfaction— but instead, we have an explicit stating of the target domain here to frame a specific *kind* of blindness that is specifically to do with the nose rather than with, as would be conventional, the eyes. If the use of *blind* here were truly metaphorical, we might expect reviewers to directly say they have *gone blind to* a particular note, but by using the phrase *nose blind* attention is instead drawn to the fact that *blind* is not a word which is typically used within the sensory domain of olfaction. This highlights one of the more complex and nuanced parts of the idea that the traditional senses semantically share a contiguous domain of perception— certain words which have very strong ties to one particular sense, like *blind* with sight, are less able to be used across sensory modalities without some kind of deliberate clarification (the use of *nose*) by the reviewer.

Other anatomical terms are used in a more directly descriptive context, occasionally in a way which includes some degree of figurative usage. Table 4.4 gives the frequencies of words tagged as part of the domain of Anatomy.

Some of the terms in Table 4.4 are present due to mistagging— *iris* does not occur in the the corpus with an anatomical, ocular meaning; all its instances refer to the flower. *Fresh* receives the Anatomy tag always as its tertiary one, with the primary tag being T3-, denoting Time: Old, new and young. Looking at the concordance lines for *fresh*, it is clear that this is the meaning intended by reviewers rather than any anatomical sense.

Three of the anatomical words in Table 4.4 refer to locations on the body where perfume is sprayed— the skin generally, and the *arm* and *wrist* specifically. *Skin* is generally used in the context of how a particular fragrance behaves in a specifically olfactory sense when sprayed on the skin of the reviewer personally: the fragrance may smell one way in isolation, but smell differently on their body.

(20) It might be my **skin** chemistry, but I honestly don't find this scent super enjoyable

(21) I must have a bad bottle because this smells like body odor on both test strips and on my **skin**

The words under the category of ANATOMY which have the most relevance to the relationship between olfactive experience and language are *heart*, *body* and *DNA*. These are words which are used to describe the nature of a fragrance, and which occur within the description of olfactive experience directly. This is a different usage to words like *wrist*, which is used in language which is more ancillary to the description itself: the reviewer may be telling us that they have sprayed the fragrance on their wrist, but that information is not necessary to communicate their sensory experience; it is merely contextual.

(22) The **heart** and base of this smells just like the base notes of Ristretto Intense Cafe[2], sweet and smooth

Heart used in this sense is a very conventional metaphor which is seen across English in a range of texts and contexts— we can drive to the *heart* of a matter; a loved one may be *close to our heart*; our *hearts* may be *set* on something in particular. In the specific case of *heart* in the context of olfactive description, when anatomical words are used in the context of such description, we can see that they are used as a metaphorical skeleton to describe the perceived structure of a smell. These terms are used to describe the central aspects of a perfume— either its *DNA* or its *heart notes*.

Outside of cases where it refers metonymically to the biological makeup of the reviewer (as in *this fragrance doesn't get on with my DNA*), *DNA* is typically used in olfactive description when comparing one fragrance to another. Fragrances are of course not biological entities capable of reproduction, and this is a clear case of metaphorically motivated usage. Importantly, it is however not part of a description of the reviewer's olfactory experience. *DNA* is being used here to describe the fragrance as a commercial product which is manufactured, bought and sold, rather than in an actual evocation of the sensory reality of the experience of smelling it.

DNA is also used to describe a type of familial, categorical resemblance between fragrances which share common elements, sometimes compared to a 'standard' fragrance in a line of different product variations (examples 23 and 24), or to describe a certain commonality between fragrances produced by the same fragrance house, like in examples 25 and 26:

[2]A coffee-inspired fragrance by Montale.

(23) within a couples hours that Sauvage **DNA**[3] starts to poke its head in

(24) Pink Sugar Red Velvet absolutely has the OG Pink Sugar **DNA**

(25) The JPG[4] **dna** is 100% there

(26) This Creed Royale Exclusive scent closes with the brand's classic **DNA** of ambergris and warm white musk

Finally, *DNA* can also be used in a sense which describes the core elements of a fragrance, which can be built upon by fragrance designers or used as a basis for various interpretations, which is where the reviewer's aesthetic judgement comes into play:

(27) it's nothing unique. The same **DNA** exists in many other perfumes and is quite common nowadays

(28) ridiculously juicy, in comparison to the original terre[5] (which is one of the great warhorse vetiver **DNA**s of all time in my opinion - just an absolute OG scent

Taken together, examples 23-28 paint a compelling picture of how *DNA* is used to describe fragrance. There is a consistent pattern of metaphor at work here, where aspects of a fragrance are conceptualised as being genetic and transmissible between different products. The standard or original (or as in example 28, *OG*) fragrance is the parent, contributing its DNA to the child fragrance, which has features in common, shares a familial resemblance, yet remains its own unique item to be judged on its own merits.

The usages of both *heart* and *DNA* are conventional metaphors, which can be found throughout English in all sorts of language, not to do with the sense of olfaction, and are not specific to the kind of sensory language under investigation in this thesis. They do indicate to some degree the way in which olfactive experiences are linked together— fragrances which share a common olfactory strand are said to have a *shared DNA* in a familial metaphor, and a reviewer may analyse the *heart* notes of a fragrance. The usages of *nose* which can be seen in the corpus are more unique to the olfactive world, especially the metonymic sense of a *nose* as a person who makes and develops perfume formulae. These are all fairly conventional examples of figurative language, which in the linguistic context of the corpus offer some

[3]This example is from a review of Dior's Sauvage Elixir, a variant of Sauvage.

[4]Jean Paul Gaultier.

[5]Terre d'Hermès, an award-winning fragrance by Hermès.

insight into how perfumes as artistic creations are understood by consumers and reviewers, and how that structure is encoded in language.

4.1.5 Cleaning and personal care

The domain of CLEANING AND PERSONAL CARE is one which is central to language about olfaction because it is the one which contains the words *perfume* and *scent* themselves.

While these two broadly synonymous words are used differently in the language of the corpus, investigating them in depth does not serve the purposes of this thesis. When *fragrance* or *scent* occur in the corpus, they are not being used to verbalise an olfactive experience— they are referring to the item which is providing that olfactive experience, in a context outwith the sensory communication which this thesis investigates, and interrogating their use in detail would uncover more about the world of fragrance as a consumer product than the language of olfaction and sensory experience.

Aside from these terms, which are naturally extremely frequent in the language of the corpus, we again see words in this domain which are used because they carry significant associative and connotative meaning. The exact olfactive experience communicated is necessarily vague: soaps and shampoos can be purchased with a variety of fragrances, and the smell of laundry depends on the detergents used in the process of washing. That such general terms are used so frequently suggests a common olfactive overlap.

An interesting feature of descriptions which involve the domain of CLEANING AND PERSONAL CARE is that in our day-to-day experience a sign of cleanliness can be an *absence* of odour. To describe a specifically, deliberately composed fragranced product as smelling *clean* must then draw on certain other associations— largely with the kinds of scents used to fragrance cleaning products. These fragrant additives generally have some overlap between brands and products—certain aldehyde molecules, which are cost-effective to synthesise, are used to fragrance soaps, shampoos and laundry detergents (Rastogi et al., 2001). This creates a common olfactory 'fingerprint' to which fragrances with similar notes can be compared.

A small number of words within this domain which can be seen in Table 4.5 are specific terminology from the world of perfume, used to describe particular categories of fragrance. *Barbershop* is used as a category-level term to describe fragrances characterised by citrus (usually lemon or bergamot) and oakmoss, typically in addition to rosemary, cedar and/or patchouli. *Powder* fragrances are those characterised by the presence of white flowers, similar

CLEANING word	Frequency
scent	2048
perfume	1004
perfumes	390
scents	330
soapy	101
rouge	97
cologne	87
shower	87
powder	78
laundry	62
soap	61
lotion	48
beauty	46
wash	39
cleaner	27
bath	24
barbershop	22
lipstick	20
scrub	19
gel	18
shampoo	18
colognes	17
toilet	16
shaving	15
toned	15
aftershave	14
bathroom	13
shave	13
deodorant	10

Table 4.5: Frequency of words within the domain of CLEANING AND PERSONAL CARE

to the distinctive smell of fragranced talcum baby powder.

The descriptions within the domain of CLEANING AND PERSONAL CARE are generally comparisons to other fragranced products, often in a generalised rather than specific way. This shows that the reviewers represented in the corpus appear to have idealised or prototypical models of certain fragranced products, like soap, shampoo or laundry detergent: these products are available in a wide range of different fragrances, yet when they are used in the context of olfactive description here the referent is a general, prototypical *shampoo*. This phenomenon can be clearly observed in examples 29-31:

(29) the problem i have with most spring/summer fragrances is that they are overpowered by lemon/lime scent or smell like **soap** and they start to smell cheap and the same as every other citrus/fresh scent

(30) Overall it's nothing special, it's a little generic like a **shampoo** fragrance, a bit sweet and annoying

(31) here's this ""white sunlit bedroom"" cliche used to describe 'clean' fragrances. [...] Hiris[6] makes me imagine that bedroom, but without any hint of **laundry detergent** or **soapiness**.

It is possible that when reviewers invoke products like shampoo, soap and laundry detergent, they are criticising the perfume for being unimaginative or uninteresting. Products like this are inexpensive, and their fragrance is secondary to their main function, and often achieved with economical, easily synthesised additives. This contrasts with perfume which is generally a luxury product and whose entire *raison d'être* is how it is fragranced. Comparison between these two items is therefore generally very unflattering to the perfume— the reviewer is comparing a product with a much higher cost to one which is available for a few pounds, and which is fragranced without apparent care towards the fragrance as an artistic composition. This attitude is highlighted by examples 32 and 33, which reference specifically *expensive* shampoo and *regal* soap. This links to the importance of the perception of class and luxury in the reviews which comprise the corpus (discussed above in Section 4.1.1 on appearance, and especially in relation to people and places in Chapter 7).

(32) You could even liken this to the **most regal** of sweet non caustic **soaps**

[6] A floral fragrance by Hermès.

(33) like a clean, floral spa scent. Like an **expensive shampoo** or hotel lotion.

From considering these examples together, it is apparent that when items in the domain of CLEANING AND PERSONAL CARE are referenced, it is a primarily economic connotation: fragrances which smell like cheap soap or shampoo are criticised, but those which are compared to luxury products are complimented. This again highlights the importance of perceived class and value in the reviews which comprise the corpus: fragrance is a luxury product, and the language which reviewers use to talk about it reflects this.

4.1.6 Light

The domain of light is not especially frequent in the corpus, but does occur with significantly more frequency in this corpus than in the reference British National Corpus, as we saw in Chapter 3. There are however relatively few word types in the corpus tagged with this domain compared to most others under investigation in this chapter, as can be seen in Table 4.6, which shows the frequencies of words tagged with the LIGHT label.

Again, we see the importance of connotative meaning here. Light and darkness do not have an inherent olfactive component: they cannot be directly smelled. Sunshine and moonlight, too, do not have odours. When reviewers describe their olfactive experiences in terms of the domain of light, they are again relying on experiential knowledge and on the cognitive and semantic associations which we have with these concepts. This is similar to what we saw in Section 4.1.3 with descriptions to do with the seasons: sensory associations to do with light and darkness are exploited using the closely linked network of sensory meaning in order to communicate information to do with the olfactive modality.

There is some clear overlap between the kinds of descriptions we see with *sunshine* and those analysed previously in this chapter which contained references to *summer*. The *sunshine* descriptions foreground the light and brightness of the sun, however, rather than its heat. This generates a different image, and a different set of associated meaning— a mental scene containing bright sunshine may be a cold but clear winter's day, for example, depending on the background and experiences of the reader.

The absence of light is also used to communicate olfactive meaning, and again those descriptions generally rely on experiential knowledge and associative, connotative meaning. *Dark* in its literal sense of an absence of light is typically used in the corpus in the context of

LIGHT word	Frequency
light	272
dark	172
darker	34
lighter	30
candle	28
shine	27
shines	13
darkness	10
sunshine	8
candles	8
moonlight	8
sunset	7

Table 4.6: Frequency of words within the domain of LIGHT

olfactive descriptions where the fragrance is compared to an imagined person or place.[7]

Dark is often used in the language of the corpus in its figurative sense, rather than to do with a literal lack of light. The closest of the OED's figurative definitions for *dark* to most of the meaning conveyed in the olfactive description of the corpus is sense II.6, 'Lacking moral or spiritual goodness; evil, wicked; iniquitous; hateful' (Oxford English Dictionary, 2024b) But while this definition is markedly negative, the word is not used in a pejorative way in the descriptions in which it occurs; rather olfactive *darkness* appears to be desirable. *Dark* has a strong pattern of collocation with *sexy* and *mysterious*. Like with the figurative use of *DNA* and *heart* shown in Section 4.1.4, this is a very conventional figurative sense which is common in English generally outside of the world of olfaction. Examples 34-36 illustrate this figurative use of *dark*:

(34) It gives me that feeling of being **dark**, mysterious, but still comforting

(35) This is a gorgeous fragrance. **Dark**, sexy, and vampiric.

(36) this is for the **dark**, mysterious, grunge/goth goddess/god who makes eye contact with strangers on the street. on purpose.

[7]This type of description is explored in depth in Chapter 7.

These examples display similar descriptive strategies as some of those we saw in Section 4.1.1, in that they evoke associative meaning to do with sexual attraction. A dense sensory network of meaning is again being drawn upon here, where a primarily visual stimulus is described (e.g. the *dark, mysterious goth goddess*) in order to communicate olfactory information through association and broad sensory denotation. This particular use of *dark*— in the context of sexual attraction— is a common one in the corpus, and will be discussed specifically with relation to how people and character are used to communicate sensory information in Chapter 7.

Like with the soap, shampoo and laundry detergent in Section 4.1.5, *candle*s can be bought and sold with a wide range of scents, yet scented candles as a general category (especially the Yankee brand) are frequently used as comparators to describe olfactive experiences in the language of the corpus, as exemplified by example 37:

(37) The smell I get is of Yankee **Candle**- not a specific **candle**- but the smell of a lot of them together

This type of usage, like with the cleaning products discussed above, suggests a common olfactive component which is shared by scented candles generally— *not a specific candle*. We could also be seeing reviewers drawing on the general impressions held with regard to scented candles, and the types of fragrance which in our lived experiences we have encountered being used to fragrance rooms rather than people. This illustrates one of the main communicative strategies people use to communicate something as ineffable as olfaction: by naming a broad category of thing and saying that the described odour also shares the common component between them, it is possible to communicate what that common component is. Compare this to a common strategy used to describe the flavour of umami to someone who has not encountered the term. As a basic component of taste, it is difficult to describe, but saying that it is the common flavour between Parmesan, ripe tomato, soy sauce and mushrooms allows this complex sensory information to be communicated (Umami Information Center, 2024). This is the same communicative strategy which underlies the use of things like *laundry* and *candles*, general categories of different objects with different smells, but which share an olfactive component, to be used in the communication of olfactive information.

4.1.7 Colour and colour patterns

The domain of COLOUR AND COLOUR PATTERNS has a complex and interesting relationship with the language of the corpus.

As can be seen in table 4.7, *green* is by some distance the most frequent colour in the corpus, but it will not be discussed in this chapter. It is used in a very specific way in almost all its instances: it is used specifically with reference to the green of plants and plant life. This metonymic usage— using the colour of plants to evoke the general concept of plants as a whole— is one of the most important and most frequent ways in which plant life is used to describe olfactive experience. For that reason, analysis of how *green* is used in the corpus will be undertaken in Chapter 5, alongside other terms to do with plant life.

The tag for COLOUR AND COLOUR PATTERNS is one which has been frequently misapplied by the automatic tagging software. The most frequent 'colour' term in the corpus is *vanilla*, a word which would be more aptly tagged within the domain of FOOD. Other such terms include *lavender*, which in all its instances in the corpus refers to the flower, rather than the colour; *orange*, which typically refers to either the fruit, things flavoured like the fruit, or within the two-word expression *orange blossom*.

While the domain of colour does of course include basic colour terms like *blue* and secondary ones like *magenta*, it also encompasses words to do with the perception of those colours like *dull* and *bright*. This analysis will separate these terms out, focusing first on a discussion of how terms which directly describe hue (basic and secondary colour terms) are used to describe olfaction, followed by a discussion of terms which are less directly and more ambiguously related to colour.

Table 4.7 shows the frequency of basic and secondary colour terms in the corpus.

Colour word	Frequency
green	298
black	235
white	195
blue	177
orange	170
pink	109
red	104
brown	27
yellow	22
magnolia	16
purple	14
grey	8
turquoise	6
beige	6
indigo	5
navy	2
magenta	2

Table 4.7: Frequency of basic and secondary colour terms

The high frequency of *black* and of *blue* in Table 4.7 is largely due to their use in fragrance brand names, for example Yves Saint Laurent's *Black Opium*, Tom Ford's *Black Orchid*, and Versace's *Dylan Blue*.

Black is also used frequently in the context of multi-word units, rather than as a descriptive term in its own right. *Black currant*, *black liquorice* and *black pepper* are frequent, and together account for approximately half of the instances of *black* which are not part of brand names like *Black Opium*.

Black coffee, however, raises an interesting point, again related to the importance of associative meaning discussed through out this section. *Coffee* smells the same whether it is black or milky— by specifying *black coffee*, these reviewers are invoking the experiential and perceived associations we have with black coffee and the people who might drink it. This point is illustrated by example 38, which is rich in associative meaning including that given

by *black coffee*:

(38) this is my "I'm not looking to be saved…." femme fatale fragrance. She's cattyeyelashes and shimmery shadows, dark berry koolaid lip plumping glossy, in a Dracula cape, on top of a silk lace slip, and motorcycle boots. She's burnt rubber and **black coffee**, and sour dough bread, and a jar of almond butter that's separated oil, and you gotta mix her up, so she lives upsidedown. She's candle wax poured on your skin... She eventually simmers down…. Tho even after she's left and you were hoping she'd stay, her ghost remains, on your pillow, on your tshirt, the strands of hair she left in your bed, and you still smell her, everywhere, singed into your nostrils, the remnants of her dry down, smokey vanilla almond musk and that playdohesque powder."

Example 38 takes this concept of associative meaning to the extreme, offering a lengthy and complex description of a woman whose image is used to figuratively and associatively describe the olfactive experience of the reviewer. We see the use of another colour-based description here, as well as the *black* of the coffee— this imagined femme fatale's lips are *dark berry koolaid* in colour, adding to the sensory associations of *darkness* like those described in the previous section. Again, these descriptors rely heavily on the imagery of sexual attraction. (Examples like this are discussed in depth in Chapter 7, which focuses exclusively on this kind of character- and narrative-focused descriptive language.)

Blue is a particularly interesting colour term in the context of olfactive description. The word has a specific, often derisive, meaning within the fragrance community to describe 'generic' fragrances with common mass-market appeal. Take Examples 39 and 40:

(39) If no other **blue** fragrance existed then yeah this would be interesting. This is like if you took the average of every **blue** frag

(40) I knew It's a safe all-year all-occasian **blue** fragrance but I didn't think It'd be soooo generic

This is a very specific use of the word *blue* which only carries significant meaning within the fragrance community. Outside of this technical usage, references to *blue* are often in relation to the packaging of the fragrance, which is not to do with the communication of olfactive experience but rather the other aim of the texts in the corpus, the evaluation of a consumer product. Most of the reviews which include the word *blue* use it in this sense,

occasionally with quotation marks in an acknowledgement that the term is an example of technical jargon.

Other instances of *blue* include use within multi-word units like *blue cheese* or *blue raspberry*. These are both generally used as straightforward comparators in the reviews in which they appear, either through direct comparison to the item (*smells like blue cheese*), or a more tangential, associative comparison like *an acquired taste, like blue cheese*.

A particularly interesting example of *blue*, which highlights the complexity of the use of colour terms in the corpus, is given in example 41. Here, the fragrance is compared directly to the colour:

(41) Beautiful fragrance. It is a mix of **blue**, **yellow** and **green** if colors could smell.

This description in example 41 is the clearest example of synaesthetic language analysed here. Colours do not have inherent odours, so the description relies entirely on associative meaning. The reviewer explicitly acknowledges that colours do not smell, and yet uses these terms to describe a fragrance. Consequently, their description is somewhat opaque: it is unclear whether one person's mental conception of what blue or yellow would smell like is consistent across the population. The smell of *green* is perhaps somewhat more consistent because of the relationship of that colour to plant life, which generally has an overarching olfactive element in common, and of which a reader is likely to have a fair degree of experiential knowledge on which to base their olfactory construal. *Blue* and *yellow*, however, do not have a similarly clear experiential link, and rely entirely on the sensory connotations of those colours to communicate meaning.

Orange occurs with a colour-related meaning only five times in the corpus, and the colour description is given in reference to the smell only once (example 42). The other four instances describe the colour of either the bottle or of the actual perfume liquid, rather than offering any type of olfactive description.

(42) sandalwood becomes more prominent in the base, lit up by amber the color of glowing **orange** Christmas lights

In Example 42, the reviewer offers a comparison between the scent of the amber component of the fragrance and the glow of orange Christmas lights. This is a figurative use of

language which makes use of a cross-modal link to strengthen the reader's mental 'picture' of the fragrance. The amber is foregrounded by the poetic description of its colour. This is compounded by the fact that amber in the world of fragrance is a 'fantasy accord'— it does not imitate the actual odour of fossil amber, which is odourless, but rather is an artistic imagination of what amber *might* smell like, traditional to Middle Eastern perfumery and achieved by combining various fragrant resins (Turin & Sanchez, 2008, p.569). By foregrounding the colour of fossil amber through the poetic comparison to glowing Christmas lights, the reviewer here also foregrounds the links between the appearance of amber and the odour of the accord which is based on it.

White occurs in the corpus frequently as part of set multi-word units, rather then being used as a standalone descriptor in its own right. The term *white floral* is very frequent in the corpus, accounting for approximately half of the instances of *white*. This term describes both a category of perfume component—white flowers— and a category of fragrance which relies heavily on the inclusion of white flower scents in its composition. *White musk* is also frequent, as is *white chocolate*. In these instances, like Examples 43-45 below, the *white* is not being used to communicate any real meaning about the fragrance. The words *floral*, *musk*, and *chocolate* are the words in these descriptions with semantic significance; *white* merely specifies a type of flower.

(43) It's opens up with a blast of **white florals** that comes off kind of mature to my nose.

(44) It's a powdery, incense-y blend sitting on **white musk**.

(45) like roasted macadamia nut coated with caramel with a little bit of coconut and **white chocolate**

Comparisons are also drawn to *white shirts* and *white linen*. In these cases, *white* carried more semantic meaning than examples 43-45. A white shirt isn't physically (or olfactively) different from a red one— when a *white shirt* is invoked, the reviewer is invoking associative meanings of our real-life encounters with white shirts and people wearing them. This can invoke ideas of fresh cleanliness— white shirts must be kept clean as contrasting stains show up on them very easily. It is possible that there is also a link here to the elements of class and elegance discussed earlier in this chapter (and in more depth in Chapter 7), in that dirty or stained clothing can signify an absence of these qualities.

White shirt is a particularly interesting phrase as it appears in the corpus. It is often used to communicate an overall impression of a fragrance in terms of a description of the clothes that somebody might wear with it, as in examples 46 and 47:

(46) This is a **white shirt**, gray chinos fragrance. Simple as that.

(47) It belongs on a crisp **white shirt**, dark denim jeans and and a cognac leather jacket

In these examples, the reviewers' olfactive experiences are not being described analytically, in direct terms of *what* they are smelling. Rather, the reviewer is relying on our associative real-world experiences. They are taking the associations we have with certain fashions, and telling us that those associations also apply to the fragrance they are smelling. In this way, their olfactive experience of the fragrance as something they perceive as classic and timeless (example 47), or perhaps straight-laced and unimaginative (example 46), is communicated indirectly.

This linguistic strategy relies on the assumption that we all share the same associations with certain stimuli. A white shirt and grey chinos, as in example 46, could be a classic and stylish fashion choice to one person, but be a dull and boring one to another. This somewhat hampers the effectiveness of the communication, in that it is not necessarily the case that the reader will correctly interpret the olfactive information which the reviewer is trying to communicate. However, accurate communication of the sensory experience may not be this reviewer's particular goal—rather, they may be prioritising the creation of a unique and entertaining piece of imagery.

Like with *black* and *white*, some other colours tend to be used to specify a certain type of object to which an odour is being compared, rather than as terms directly descriptive of olfactive experience in their own right. *Pink* and *red* are frequently used to describe types of rose, *brown* is used to specify *brown sugar* in just over a third of its occurrences, and *yellow* specifies a *yellow flower* in around half of its instances.

The link between colour and olfaction is one of the most heavily researched cross-modal correspondences. Experimental research has suggested a strong and systematic link between colour and olfaction. Wnuk et al. (2017), working with speakers of Dutch (who typically use source-based odour descriptors like *smells like lemon*), Maniq and Thai (who use more 'detailed and abstract smell vocabulary'), investigated the link between colour, odour and labelling. In their study, colour-odour associations were affected by the label participants

gave to the odour. For example, an odour which was verbally identified by participants as 'banana' was significantly more likely to be associated with the colour yellow. Further to this, the speakers of Maniq, who do not generally use source-based odour descriptors, made few consistent odour-colour associations.

Gilbert et al. (1996) asked participants to match a series of test odours to Munsell colour chips[8], and found a significant pattern of association between odour and colour. For some odours, there was some variation in the colours ascribed to them— civet, for example, showed patterns of association with five different colour chips. In some cases, the colour associated with the odour might not be the one which would be expected from the odour source— neroli (orange blossom) displayed a strong pattern of association with the colour yellow, rather than orange, and jasmine with pink rather than white. This somewhat problematises the link between colour and odour. While experimental and corpus linguistic evidence suggests a link exists, the results of experimental studies suggest that such a link may not necessarily be firmly rooted in experiential knowledge.

Other studies have similarly shown a strong link between the two perceptual domains, which manifests in various ways: a visual colour stimulus can help with accurate odour identification and discrimination[9] (Blackwell, 1995; Davis, 1981; Zellner et al., 1991; Stevenson & Oaten, 2008); the colour of wine affects how it is judged even by expert tasters (Morrot et al., 2001); foodstuffs are perceived as having a stronger and higher-quality smell when they are appropriately coloured rather than colourless or inappropriately dyed (Christensen, 1983).

This close link between colour and odour, which is apparent in the corpus data investigated in these pages and in previous experimental research, further suggests that the ties between the senses in our cognitive-linguistic conceptualisation are very close, and may even be close enough to be considered a contiguous domain of perception. The examples analysed in this section, in tandem with a wealth of previous research into the specific association between colour and olfaction, show a clear link between the two domains, and point towards a densely connected network of perceptual and sensory meaning.

[8]Standardised coloured pieces used in colour research, such that participants across studies interact with the same colour stimuli.

[9]For example, a strawberry odour is easier to name if the presented liquid is dyed red.

4.2 Discussion

In the previous sections which comprise this chapter, we saw several main patterns with the language around the semantic domains most distant from the sense of smell. The first, and the most significant in this analysis, is the importance of associative, especially connotative, meaning. When reviewers describe an olfactive experience in terms of something to do with time (like *summer*), or with light (*dark*), or colour (like *blue*), they are not invoking any inherent olfactive component of these concepts: they are relying on shared experiential knowledge and associative meaning to communicate their sensory experience to readers. Importantly, these associative meanings are by definition different for different readers—the reader's *summer*, and the olfactive elements evoked by the word, are very likely to be different from the reviewer's.

Second, we see that words from some domains are used not to build the content of an olfactive description but to provide the structure of that description. Anatomical words like *DNA* and *heart* are used in metaphorical mappings, with the body as source and the perceived structure of a fragrance as target. This metaphorical usage appears to be restricted to the central, core aspects of a fragrance's structure rather than any more peripheral elements— a perfume has *heart* notes, but its top notes are rarely described as *head* notes and base notes are never *feet* notes.

Similarly to this, some words are used to give a broader colouring or tone to the more literally descriptive content of a description, like when a *vanilla* fragrance becomes *sensual vanilla*. This is important in terms of how the linguistic conception of the senses can be understood as a contiguous domain of perceptual experience, albeit with different facets.

This chapter has analysed the language related to those key semantic domains in the corpus which are the furthest away semantically from the world of olfaction. Investigating this type of language has illuminated some answers to the main research questions outlined in the introduction to this thesis: namely that a primary descriptive strategy when direct olfactive description is ineffable is to rely on associative meaning as well as comparison to real-world olfactory referents. A second key point illustrated throughout the language explored in this chapter relates to the way in which the senses are conceptualised linguistically as a densely and closely connected network of sensory meaning which can be said to amount to a contiguous domain of perceptual experience. When non-sensory domains such as those explored in this chapter are invoked, it is not only their olfactive components which are

important in the communication of meaning. In many cases, things in these domains do not even have any olfactive component to begin with. Because these other sensory aspects are highlighted in order to communicate an olfactive experience, this indicates very close links between the senses, and that associative meaning can be shared between different modalities of perception. The following chapter will now build on this by investigating language which is closer semantically to the domain of olfaction, that of food and plants, and analyse what description rooted in those domains can tell us about the linguistic strategies adopted by reviewers who wish to communicate olfactive information.

Chapter 5

Food and Plants

5.1 Introduction

The previous chapter dealt with the key domains in the corpus which are the most semantically distant from the sense of olfaction. Moving closer now in semantic space to that domain, this chapter will deal with the linguistic relationship between the language of the olfactive and the semantically and culturally overlapping worlds of food and plants.

A close analysis of language involving these semantic domains is especially important given the nature of the dataset under investigation here. Food items like fruit and spices and plant matter like flowers and leaves are often crucial ingredients in perfume formulae, and are used extensively in the marketing and branding of fragrances. Investigating the language around these elements closely therefore allows for the construction of a more comprehensive answer to the questions posed in the introduction to this thesis. Close analysis of this means it is possible to determine how the actual source components of an olfactory experience are used linguistically, and to investigate the semantic processes which underpin this use. The following chapter will mainly argue that when these terms are used in olfactory description, it is not only the olfactive parts of their meaning which are important in communicating the sensory experience of the reviewer. Rather, non-olfactive sensory components are often highlighted in order to generate a more holistic and experientially grounded sensory construal which is better able to communicate the complex olfactory information in question.

While the domains of food and plants are generally separate, the boundary between them is very fuzzy and unclear in a sensory-descriptive context. That is to say that many words have facets of meaning within both semantic domains, and the boundary between

those two meanings is not clearly or obviously apparent, and in some cases may not exist at all. For example, when we talk about something which *smells like ginger*, is the *ginger* in that sentence a PLANT word (the rhizome of the ginger plant), or a FOOD word (that rhizome in specifically its role as a culinary spice, its form with which most speakers are likely most familiar)? In semantic space, it could be said that these two facets of *ginger* are concurrent and overlapping— the referent in the real world is the same (and, crucially, smells the same) no matter which specific domain, FOOD or PLANT, it is deemed to be part of. An olfactive description which mentions *ginger* invokes both these facets of the word's meaning (*ginger* as the root of a plant and as a culinary spice) at once. For that reason, this thesis will treat food and plants together in this single chapter, rather than further problematise the analysis by imposing an unnecessarily hard divide between the two domains.

Because of the way that the corpus is tagged and how the tagged corpus was searched, some terms (the fruits apple, lemon and orange) appear in the lists of both the top 20 words tagged FOOD and PLANTS. This is because each word is given a primary, secondary and tertiary tag by the automatic tagging engine, and because of the inherently arbitrary nature of this kind of semantic categorisation it is not possible to manually allocate one 'correct' tag to each ambiguous case. The ambiguity here does vary in degree—*orange* in the context of *orange blossom* or *orange flower* is clearly a PLANT-based usage, and in the expressions *orange juice* and *orange creamsicle* it is well within the domain of FOOD. But when it occurs in expressions like *orange grove*, the semantic categorisation of *orange* is much less clear. Are we talking about oranges as part of the trees in the grove (PLANT) or as a foodstuff which is being grown in the grove (FOOD)? Because of this ambiguity (and because this ambiguity is an interesting linguistic feature in its own right), all categorisations made by the automatic tagger will be allowed to remain as they were inserted.

The other close semantic relationship which must be considered before looking at the data is the relationship between the domains of FOOD and TASTE. These two areas of meaning are for obvious reasons very closely linked in our lived experience, and could happily be treated together in this analysis. The reasons for keeping them separate however are twofold—first, it allows the structure of this thesis to be maintained as a journey from the most distant semantic domains from the sense of smell (e.g. the CLEANING and LIGHT domains discussed in Chapter 4) to a discussion of TASTE alongside the other sensory domains TOUCH, HEARING, SIGHT and SMELL itself in Chapter 6. The second reason for not treating the domains of FOOD

and TASTE together in this analysis is that while the domains do overlap in semantic space, they do not have a significant lexical overlap like we see between the domains of FOOD and PLANTS. Many olfactive descriptions found in the corpus do employ words from both the FOOD and TASTE domains in a single description, as in example 48 in which the *acidic* (TASTE), fresh *bergamot* (FOOD) supports a *peppery* (FOOD) opening, but there is no lexical-categorical ambiguity between these terms like with *ginger*.

(48) It opens up very **peppery**, supported by **acidic**, fresh **bergamote**

While there are many instances in the corpus like Example 48, which employ comparative descriptions from the domains of both FOOD and TASTE, the categorisation problem between the domains of FOOD and PLANTS which we saw with the example of ginger above is not as problematic in this case, between FOOD and TASTE. FOOD words are generally concrete foodstuffs like *fruit* and *cream*, where TASTE-categorised words are more to do with our sensory perception and evaluation, including words like *sweet* and *delicious*. There is a very significant semantic and experiential overlap between the domains—we use our sense of taste to perceive the food we eat— but not a lexical overlap.

The following sections will interrogate the corpus based on search terms sourced from the domains of FOOD and PLANTS. First, I will establish what those words are and how the list of search terms was established. Then, in Sections 5.2 and 5.3 respectively, I will analyse the language of the corpus using those searches. Section 5.4 will offer a synthesised discussion of the broader patterns seen across the two domains, and Section 5.5 will discuss specifically what the examples discussed in the preceding parts of this chapter mean in terms of metonymy and the cross-domain transfer of meaning. The language investigated in the following sections is rich in sensory meaning, and has clear implications for our understanding of how the senses are linked semantically— the FOOD-based descriptions in Section 5.2 show clear semantic and lexical links between the gustatory and olfactory domains as well as illustrating how detailed description in one sensory modality can be used to highlight certain facets of a seemingly unrelated olfactory experience. The PLANT-based descriptions in Section 5.3 use a broader range of sensory experience to communicate their olfactive information.

5.1.1 FOOD words and PLANT words

First, it is necessary to establish which words in the corpus belong to the semantic categories of FOOD and PLANTS. Tables 5.1 and 5.2 below show the frequencies of the top 20 words tagged with the label F1, FOOD, and L3, PLANTS, respectively. As discussed above, the frequencies do not distinguish between instances where the tag is given in the primary, secondary or tertiary position, which allows words like *orange* and *cream* to be appropriately included in this table (the primary tag for both words was COLOUR AND COLOUR PATTERNS). As outlined in previous chapters, there are some issues inherent in this methodology where tags have been misapplied to certain words— these are mostly to do with colour (e.g. *violet* tagged as a colour term rather than as a plant term) and will be outlined on a case-by-case basis below.

In the following sections, this chapter will begin with discussion of the FOOD words with the least relevance to the domain of plants, like *cream*, before moving along the cline of plantness through sweetness (including words like *candy* and *sugary*) and fruit (*apple*, *lemon*) to finish with the PLANT words which have the least relevance to the domain of food, including flowers like *jasmine* and plant-specific adjectives like *leafy*.

5.1.2 Theoretical framework: Zone activation and metonymization

In terms of theoretical framework, the crucial concepts in this chapter are those of metonymy and zone activation.

The concept of the 'active zone,' introduced by Langacker (1984) in a framework of cognitive grammar and discussed in detail in Chapter 2 of this thesis, describes the process by which we conceptualise only certain relevant parts when forming our understanding of an utterance. In Langacker's definition of zone activation, active zones are 'those portions of a trajector or landmark that participate directly in a given relation' (Langacker, 1984, p.177). In his classic example sentence 'your dog bit my cat,' the action of BITING involves only selected parts of the animals, rather than the whole entity. It is the teeth (and, to a somewhat lesser extent, the jaws) of the dog that are doing the biting, and only (an unspecified) part of the cat which is being bitten.

The concept of the active zone is a broad and overarching one. Zone activation is often discussed in tandem with metonymy, and studies of the last decade or so (Geeraerts & Peirsman, 2011; Bierwiaczonek, 2013; Paradis, 2004, 2011; Zhang, 2020) have focused on zone activation in this context. The demarcations between metonymy, zone activation

Food word	Frequency
vanilla	723
fruity	276
creamy	212
coconut	122
pepper	115
sugar	113
honey	113
spices	105
tea	104
spice	104
cinnamon	97
fruit	97
apple	96
lemon	95
chocolate	94
caramel	90
bergamot	80
candy	76
cream	72
orange	68

Table 5.1: Frequency of top 20 FOOD words

and related concepts like facetization are fuzzy and not universally agreed, as discussed in Chapter 2. In the second part of this chapter, Section 5.5, I will focus on how the three concepts of metaphoricity, metonymization and the active zone can be used to help us understand the cognitive mechanisms behind the language of olfaction without attempting to draw a strict demarcation between them. The aims of this thesis are to understand how olfactory experiences are verbalised and what this tells us about the structure of the senses as a contiguous domain of perceptual experience, and formulating a clear distinction between metaphoricity, metonymization and zone activation does not serve that purpose. The concepts are important and useful for the analysis contained in this chapter, but they can

PLANT word	Frequency
floral	496
rose	425
green	264
jasmine	152
almond	137
lavender	131
wood	123
coconut	120
flowers	106
apple	98
blossom	85
lemon	84
cedar	83
iris	80
garden	79
herbal	75
flower	72
cherry	70
pear	64
orchid	50

Table 5.2: Frequency of top 20 PLANT words

be employed in this context without a conclusive theoretical discussion to establish strictly where one ends and the other begins.

In the context of the Fragrantica corpus and the language of olfaction, zone activation is a very useful framework for thinking about and understanding what fragrance reviewers are doing with language. Further to the discussion of the concept established in Chapter 2, it is now possible to establish how it can be used specifically with reference to the domains of FOOD and PLANTS.

(49) I get a sweet **cherry** on the opening that dries down a lovely, powdery, and sweet tobacco

Taking Example 49 from a perspective of the active zone, we can say that the reviewer is drawing only on a particular relevant aspect of *cherry*, rather than on the entire concept of the fruit. The cherry as a whole, as a fruit, is not brought into the way the sentence is construed and understood, but rather only part of the cherry—its smell—is relevant. The adjective *sweet* further narrows the active zone to the sweeter aspects of the cherry's smell, rather than, for example, the almond- or marzipan-like quality provided by the benzaldehyde[1] aromatic molecule.

This is a fairly straightforward, illustrative example of how the concept of the active zone can be applied to sensory language. But in the context of more complex descriptive usage, does this explanation provide the full picture? Are we truly only drawing on the fragrance of a cherry when the cherry is mentioned in an olfactive context? Or are we also making associations with its colour, its flavour, and other related sensory and non-sensory concepts (the situations in which we might eat cherries, for example) when we build a picture of the olfactive experience which is being communicated by this text?

Section 5.5 of this chapter will explore this idea further, and investigate the extent to which this process of zone activation can be used to understand olfactive language from a cognitive perspective. By analysing examples from the corpus within this framework and from the perspective of metonymy and metaphoricity, we can make some progress towards understanding the cognitive relationship between olfaction and language. As a textual analysis, this thesis can only provide part of this understanding— without experimental data from psychological or neurological studies, the linguistic evidence can only form part of the picture.

A second key theoretical aspect of this chapter is that of metaphoricity. The notion of metaphoricity challenges the binary distinction between the metaphorical and the literal, and in recent years has seen growing attention from linguists (for example Julich-Warpakowski & Jensen (2023); Winter & Strik Lievers (2023); Dunn (2014); Hanks (2006). By considering the olfactive language contained in the corpus under investigation here through the lens of metaphoricity, it is possible to take account of the very fuzzy nature of the boundary between the literal and the metaphorical, which (as will become apparent in the following sections) is especially apparent in this particular facet of sensory language.

This chapter contains some of the most clearly literal language in the corpus. Most of the

[1] An aromatic molecule found naturally in cherries and almonds, and which is synthesized for use as a flavouring food additive and in perfumery (National Center for Biotechnology Information, 2024a).

instances where food and plants are mentioned within olfactive descriptions in the corpus are very straightforward comparisons where a fragrance *smells like X*, *has notes of Y*, or *gives Z vibes*. For this reason, metonymy and zone activation will be the key theoretical constructs in the analysis of examples in this chapter, with a briefer discussion of metaphoricity given in Section 5.5.

The remainder of this chapter (Sections 5.3 and 5.2) will provide an analysis of the FOOD and PLANT words present in the Fragrantica corpus, with a particular focus on their patterns of collocation. All collocation searches in the following sections were performed with a window of 5 words either side of the search term, and results in the tables in the following sections are in descending order of log-likelihood[2].

I will begin with a discussion of the FOOD category, then progress via the ambiguous FOOD/PLANT terms like *ginger* discussed above to consider the role of PLANT words in olfactive language. Looking at Table 5.1, the most frequent FOOD words are of three main types—words to do with sweetness, words to do with fruit, and words to do with spices. For the discussion of the FOOD words in this chapter, I will begin with the few words which do not belong in any of these categories, then move on to words about sweetness, then to spice-adjacent words, then words to do with fruit. Then, in the discussion of PLANT words, I will discuss flowers (by some distance the most common type of PLANT word), followed by woods, then words to do with greenery, leaves, and general plant-related terms like *garden*. Following this, Section 5.4 contains a broader, more synthesised discussion of the patterns established in the previous sections, drawing some more general conclusions from the more strictly stratified bulk of the chapter. This more general section will contain the bulk of the theoretical work in this chapter to do with metaphoricity, metonymy and zone activation, where the earlier sections will focus mainly on patterns of collocation and close analysis of specific examples within each category. Separating the analysis in this way will allow for a close analysis of specific examples in the first part of the chapter, followed by a discussion which builds on that analysis to create a picture of how the domains of FOOD and PLANTS are rendered in the context of olfactive description and what those patterns of usage tell us about how the senses are conceptualised as a closely and densely interlinked network of meaning and understanding, and ultimately as a contiguous domain of perception.

[2]A measure of significance which determines the strength of collocation between words.

5.2 Corpus analysis of FOOD words

5.2.1 Exceptions: *Cream* and *Tea*

Two of the most frequent FOOD words (Table 5.1) do not fit into the rough categories of sweet, spice and fruit outlined above: *cream* and *tea*. Outside the top 20 most frequent FOOD words in that table, words which do not fit into those categories are similarly rare: *mint*, *herbal*, *liquorice*, *salt*, and *milky* are the only further examples in the top 100. It is possible to argue that *tea* (and perhaps *mint* and *herbal* from the top 100) belongs alongside the spice-related words: both are made from parts of plants which are used for flavour rather than direct consumption, and both are strongly aromatic in nature. Tea however is prepared and drunk on its own, and is not used to flavour other foods in the way that spices are. Tea is also a product made from the leaves of a plant, rather than from the bark or roots, like spices. For these reasons it will be kept separate from that category.

Tea is typically tagged with FOOD as its secondary tag, behind the perhaps more appropriate DRINKS. (DRINKS is not a category which is analysed in this thesis because it frequency and keyness in the corpus did not establish it as a significant semantic category, as explained in Chapter 3.) The case of *tea* and *creamy* are the only instances in the FOOD category where the decision to use a looser searching methodology to include secondary and tertiary tags has created an issue— it is likely that *tea* is better suited to the DRINKS category, and as we shall see in this section it could be argued that *creamy* more properly belongs alongside words to do with TEXTURE, which is typically its primary tag. The reason for keeping the search methodology to include these secondary tags is that the tagging engine has a bias towards tagging certain lexical items within the category of COLOUR, and using the wider methodology including secondary and tertiary tags allows us to include *vanilla* and *orange* in the (appropriate) FOOD category. For reasons of consistency and completion, maintaining the categorisations allocated by the semantic tagging engine, I will also include *cream(y)* here, before moving on to those words which are unambiguously part of the FOOD category.

Cream and *creamy* are particularly interesting words to have as high a frequency as can be seen in Table 5.1. They do not have broadly overlapping characteristics with the other types of food present in the list (they are neither spicy nor fruity, and not sweet in the conventional sense of *sugar*, *candy* and *honey*), nor is *cream* a traditional ingredient in perfume compositions in the way of citrus fruit and some spices. It is very much an outlier among the top 20 FOOD

words here, and its relevance to the world of fragrance and the language of olfaction is not immediately clear. As we will see in the examples which contain the word *cream*, in many of its instances it is the textural sense of *cream* which is salient rather than its sense as a foodstuff.

Below are the top ten collocates of *tea* and *cream* across the corpus, ordered by log-likelihood, from a search performed with a window of 5 words either side of the search term.

tea	cup, green, black, of, earl, iced, chai, jasmine, matcha, with
cream	ice, whipped, bum, body, vanilla, shaving, hand, soda, and, lotion
creamy	sweet, vanilla, and, smooth, sandalwood, warm, milky, coconut, nutty, rich

Table 5.3: 10 strongest collocates of *cream*, *creamy* and *tea*

Tea

The collocates of *tea* are generally very straightforward, indicating the existence of common multi-word units like *cup of tea*, *green tea*, *black tea*, *earl grey tea*, etc. (*Grey* is not in the collocate list here because it is inconsistently spelled between *grey* and *gray*, diluting its frequency.) Most of these terms, alone with *chai*, are varieties of tea which have distinct olfactory identities due to their specific additions (bergamot in the case of Earl Grey, and spices in the case of chai) or methods of processing (increased oxidisation in black tea compared to green). The most interesting collocate with *tea* is *iced*, which appears to be strange in an olfactive context: how does the temperature of tea affect its perceived odour? *Iced* appears with *tea* 6 times in the corpus, four times as simply *iced tea*, once as *iced earl grey tea*, and once as *iced lemon tea*. These instances are reproduced in examples 50 to 54 below, with their full context from the reviews in which they occur. There are only five reviews here, despite the six occurrences of *iced tea*—one review includes *iced tea* twice.

(50) This fragrance feels like a perfect addition to a semi-warm midday. It's not overpowering. The fragrance reminds me of a black **iced tea** with lemon. […] it smells like a well balanced **iced tea**.

(51) Reminds me of the best sweet **iced tea** I've ever tried (at Paula Deen's restaurant in Georgia) which had a fresh mint sprig in it.

(52) I get a unique cozy experience of laying in a hammock on a hot summer evening, beneath fruity / flowering trees and a pitcher of lemonade, or **iced tea** near by.

(53) Definitely a sugared **iced lemon tea** with soft and warm hazelnut nuances.

(54) Like drinking an **iced earl grey tea** with a fresh slice of lemon squeezed into it, while looking out into a misty jasmine garden and realizing that if you don't appreciate these moments of life one by one then they will slip by you through the years

In two of these five reviews, examples 52 and 54, the salient thing being described is not the iced tea itself, but the experience of drinking it, and the environment in which the iced tea would (ideally) be consumed. In example 52 the fragrance is not being described in terms of tea at all. The tea is a part of a scene: a hot, languid summer evening. This general, impressionistic description, of which the tea is a small part, is what is being used to communicate the olfactive experience, rather than any reference or comparison to the olfactive properties of the tea itself. The odour of the tea is not important, rather we are invited to imagine the kind of hot summer evening on which someone might have iced tea to hand— that scene is what the olfactive experience is being compared to, rather than the tea directly.

In example 54, the odour of the tea itself has a little more relevance to the scene being set. Rather than simply being 'there' as a decorative part of the setting as in example 52, the tea in example 54 is actually being consumed, and experienced with the senses of taste and smell. We still get elements of the type of impressionistic description of example 52, but there are more concrete olfactive elements to the description here too—the tea, the bergamot of the Earl Grey, and the jasmine of the garden are all traditional perfume notes. The juxtaposition of these concrete, comparative and fairly literal descriptions in the context of a much more subjective, impressionistic description (the sense of moments slipping by through the years does not have a direct olfactive component) places example 54 somewhere between the fully narrative based descriptions like example 52 (see Chapter 7 for a full analysis of these) and the literal, *X smells like Y* constructions as seen in example 53, where the fragrance is being directly compared to another olfactive object, the lemon iced tea.

Looking at these examples together, we can determine why *iced*, which on its surface does not carry any olfactive meaning in the way that (for example) *green* and *black tea* smell differently, is a meaningful collocate of *tea*. The examples above illustrate that we are not necessarily thinking about how the temperature affects the odour of the tea—how iced tea

smells different to a hot cup of tea. Rather the reviewers are exploiting the associations we have with iced tea: it is generally served with lemon (a distinct olfactive component), on hot summer days (a more impressionistic facet of its associative meaning). It is this association that is being used to communicate the bulk of the olfactive information in the description. This highlights the importance of associative meaning in olfactory description: the key elements of the description are not themselves olfactive, but they carry associations which either have discrete olfactive identities or which communicate a general, impressionistic sense of how the olfactory experience feels to the reviewer.

Cream

The word *cream(y)* has three distinct meanings in the corpus, which are apparent from the collocate list in Table 5.3 earlier. The first refers explicitly to the dairy product, as in examples 55 and 56 below, and is indicated by the collocates *ice*, *whipped*, *vanilla*, *milky* and *soda*. The second, and less frequent, refers to *cream* in a cosmetic sense, as in body, hand or shaving cream, as in examples 57 and 58. (The collocate *bum* in Table 5.3 refers to a specific product, Brazilian bum-bum cream, a cosmetic with a skin-tightening effect and a distinctive odour. This collocate is not analogous to *hand* and *body*.)

The difference in frequency between these meanings can be clearly seen in the collocates of *cream* when they are ordered by frequency rather than likelihood:

cream	and, ice, vanilla, whipped, body, bum, hand, shaving, lotion, soda, soda
creamy	and, vanilla, warm, smooth, sandalwood, coconut, rich, milky, nutty

Table 5.4: 10 strongest collocates of *cream* and *creamy*, arranged by frequency

In this table, it is apparent that collocates which imply dairy like *vanilla*, *sweet* or *ice* are more frequent than those which imply a cosmetic meaning like *hand* or *body*. The variety of collocates also skews heavily in favour of a dairy-based meaning, with only 8 of 24 collocate types (*hand*, *body*, *bum*, *shaving*, *lotion*, *bumbum*, *nivea*, *shave*, *bodywash*) pointing towards a cosmetic meaning.

Note that example 58 is from a review of a fragrance produced by Nivea which is specifically intended to mimic the scent of its suncream (*Nivea Eau de Toilette*) so is perhaps not so much a descriptive comparison as an evaluation of the fragrance's ability to fulfil the promise of its marketing.

(55) soliflore[3] with enhancements of softly-**whipped vanilla cream** and a touch of moss

(56) At first spray, I get the **whipped cream**, coconut, and lavender

(57) embodies the scent of a luxurious **body cream** like no other!

(58) wow, this smells EXACTLY like the **sun cream** and it hit me with a huge spritz of nostalgia

If we search for the adjectival *creamy* (which is investigated in more depth below), a handful of uses are marked as being directly related to the particular odour of dairy products by the collocation of *lactonic*, a technical industry term denoting scents with a milky, dairy characteristic (Turin & Sanchez, 2008, p.572):

(59) an animalic, **lactonic**, **creamy**, rich, sexy scent

(60) This is one of the most **lactonic** scents, ultra thick, **creamy** milk.

These examples are two clear instances of direct comparison to the actual odour of dairy, rather than the looser, more abstractly referential examples 55 and 56 above. Examples 59 and 60 are easily explained as straightforward comparative statements, specifically referring not only to cream and dairy but also explicitly to the lactonic quality of its odour. The olfactive information being communicated is very clearly and precisely set out in the language, with very little room for interpretation on the part of the reader (in this specific dairy-odour context at least—*sexy* in example 59 is very subjective).

The third meaning of *cream(y)* in the corpus is a textural one, which is only apparent in the collocate list through *smooth*, a collocate of *creamy*. This meaning can be seen in the examples 61 and 62 given below, in which the textural meaning is clear from the close collocation with *soft* and *smooth*.

(61) the saffron is laid back and gives it a **soft** and **creamy** feel.

(62) the only 2 notes I get are a **smooth** and **creamy** vanilla

This meaning is the most interesting from the perspective of metaphoricity—there is certainly some amount of cross-modality in the language here, applying aspects of physical

[3] A fragrance which aims to imitate the smell of a single particular flower.

sensation to an olfactive experience. The degree to which this language is actually metaphorical will be discussed later in this chapter, and in depth in Chapter 6. That chapter, on the relationship between the language of olfaction and the other senses, discusses how texture and smell are linked linguistically. The textural sense of *creamy* is discussed in depth in that chapter, alongside other similarly textural words like *smooth* and *rough*. The present section will look at the word with a focus only on its food-based meaning.

Thinking about *cream* from the perspective of zone activation, it is possible that in some instances the salient aspect of *cream* in both these cases, both the dairy- and cosmetic-based meaning, is to do with texture rather than a direct relationship to smell or flavour. That is to say that the sensory experience of a creamy mouthfeel or of the sensation of touching cosmetic creams is being applied cross-modally to an olfactive experience. In most instances of *creamy* in the corpus, illustrated in examples 63, 64 and 65 below, *creamy* is clearly used in a figurative sense to draw upon the textural aspect of its meaning to describe an odour and the olfactive experience of it. (See CREAMY definition 2b in OED: "*figurative* Soft and rich, luscious". (Oxford English Dictionary, 2024a)) This is by some distance the most common use in the corpus.

(63) The tuberose turns **creamy** after a while

(64) It smelled smooth and **creamy** with a touch of spice

(65) I don't get the very **creamy** part either. It is not silky

These uses of *creamy* are different from the *cream* examples in examples 55 and 56 above, in that they focus on the textural aspects of the word, where examples 55 and 56 are specifically to do with cream as an edible foodstuff, where the textual component is significant but there is also a real-world experiential referent to which the fragrance is compared.

The varied use of *creamy* in the corpus, and the range of different meanings it can have, illustrates an interesting point in terms of cross-modal use of language. Despite being tagged by the USAS software as a FOOD term, the interesting cross-modality with this particular word is in how its textural characteristics can be used to communicate olfactive meaning. Cases in the corpus where *creamy* is clearly being used in a food-related way are limited compared to those where its meaning is the figurative, textural one referred to above. Research on the cross-modal link between olfaction and the sense of touch is very limited, even more so than the link between olfaction and vision discussed above. (See for example Wnuk et al. (2017),

who investigate the link between olfaction and the sensation of temperature; Labbe et al. (2008), who discuss the link between taste, olfaction and trigeminal[4] perception; and Spector & Maurer (2012), on the associations between olfaction, colour and texture.)

The links between *cream* used in olfactive description and the domain of texture and touch are clear, and again indicate a close and easily accessible semantic link between the sensory domains as part of a close network of sensory meaning. The odour-taste aspects of cream as a foodstuff (important in examples 55 and 56) are evoked alongside the textural aspects of its softness, which allows the reader to form a broad sensory construal of the olfactory experience described. That the textural aspects are so important here points strongly towards a complex and contiguous domain of sensory perception, where words primarily associated with one sensory modality can often be used to describe stimuli in another modality without a figurative transfer of meaning.

5.2.2 Sugar and sweetness

One of the most clearly apparent features of the frequency table of FOOD words in Table 5.1 is that the majority of the words relate to sweet foodstuffs. *Sugar*, *honey* and *candy* are all unambiguously, certainly and prototypically sweet in flavour. The high frequency of *candy* illustrates the bias of the corpus towards US English— compared to the 78 (tagged) occurrences of *candy*, we see only 8 instances of the UK English *sweets*, and only 2 of the Australian English *lolly*. Searching for the singular noun *sweet* in the corpus is difficult: the tagging engine has marked all 2,509 instances of the word as an adjective, but the very low frequency of the plural indicates a low degree of representation of British English in the corpus. This is especially apparent when we consider that *candy* is often a mass noun in a way that the singular *sweet* cannot be.

Vanilla, *chocolate* and *caramel* have associations with sweetness—while they do not activate the 'sweet' flavour receptors on the tongue directly (see Chapter 6 for a full discussion of this), these flavours are strongly tied to sweet flavours. *Vanilla* is frequently present in sweet baked goods like cookies and cake, and is used to flavour dairy-based sweet confections like ice cream and fudge. *Chocolate* is usually consumed as a sweetened bar of confectionery, but pure cocoa is bitter in flavour. *Caramel* again has associations with confectionery, in its

[4]The oral perception of chemical-based sensory phenomena outside of the traditional sense of 'taste', like the heat of chilli, the cool of menthol, the astringency of citrus pith, etc.

straightforward sense as caramelised sugar, but the word also has applications in a broader food-based sense—vegetables or the exterior of meat for example can be caramelised— and does not always denote sweetness. While at a chemical level the process of caramelisation does involve changes to sugars contained within the food being caramelised, there is a more complex odorific profile implied by *caramel* than by *sugar*.

This bias in the FOOD words of the corpus towards sweetness is also apparent in the high frequency of words to do with fruit: it could be argued that *fruit(y)* also implies sweetness, and that *coconut*, *apple*, *orange* and possibly *bergamot* (though probably not *lemon*) imply some degree of perception of sweetness. There are some interesting patterns around these fruit words, and they are employed in slightly different ways to the more sugar-centred words listed here. For that reason, they will not be discussed in this section but will have one of their own later in this chapter (Section 5.2.4).

First, let us look at the collocates of the three *sweet* words proper—*sugar*, *honey* and *candy*. Table 5.5 below shows the 10 strongest collocates of each lexical item, searching with a span of 5 words either side of the search term. The table excludes collocates which are part of brand names: for example, the two most likely collocates of *sugar* by some distance are *pink* and *aquolina*, but in all but two occurrences in the corpus where those words collocate it is in the name of the fragrance *Pink Sugar* by the Italian fragrance house Aquolina. The two instances of genuine collocation with *pink* are given in Examples 66 and 67 below.

(66) candied fruit, syrupy peach and burnt sugar. Sweet, **pink** and plastic.

(67) the powdered sugar on those firmer **pink** style marshmallows

These examples are linguistically interesting from the perspective of cross-modal/synaesthetic language, where the colour pink is being associated with sweetness. This phenomenon will be discussed in depth in Chapter 6, alongside other colour- and vision-based language.

sugar	burnt, brown, vanilla, cookies, cotton, candy, powdered, cane, with
honey	and, tobacco, beeswax, sweet, cinnamon, drizzled, with, amber, thick, bee
candy	cotton, like, sweet, floss, sugar, smells, grape, flavored, sugary, burnt

Table 5.5: 10 strongest collocates of *sweet* words

One apparent pattern of collocation in the table is that of these three words, the collocates indicate different sentence structures which are disproportionately used with each word.

Candy collocates with two very basic words used to structure olfactive language—*smells* and *like*. This possibly indicates that in a very syntactically simple type of olfactive language, where the object smelled is described as *smelling like* something else, users generally tend to take the one of the most prototypical examples of that category, in this case *candy*.

(68) don't care about horrible performance and smelling like a **candy** shop this is for you.

(69) The simple description would be it smells like grape **candy**

(70) Smells like a fruit **candy** shop

Candy is a very general descriptor; it has a categorical meaning rather than a single referent. Sometimes in a certain context a specific type of candy is meant: *cotton candy* and *candy floss* are two obvious examples from the collocate list in Table 5.5, and other examples like *gummy candy* and *Swedish fish candy* exist in the corpus.

(71) Boardwalk cotton **candy** and a jasmine bubble tea yum

In example 71, we see *candy* used in a very specific context. Not only does this example refer to a specific item—*cotton candy*—but also to a specific situational environment in which the cotton candy was purchased and consumed. Like in some of the *iced tea* examples (52 and 54) above, the situation in which the food item is being consumed is key to its descriptive value. In these examples, shared associations are assumed to exist between certain experiences and places (in this case a boardwalk), and those associations are exploited to communicate olfactive meaning.

(72) With **sugar** and gourmand notes

(73) Sweet citrus with burnt **caramel sugar**

(74) She's spicy, warm, with a punch of cinnamon & **honey**

(75) A pleasant white flowery cologne, with oakmoss and **honey**

With *honey* (examples 74 and 75), a more specific and precise descriptor than *candy* (which can indicate a large variety of confectionery, compared to the specific single product *honey*), we see a slightly more complex structure to the olfactive description than in examples 68, 69 and 70. In these *honey* examples, the olfactive description is not introduced with

the simple and straightforward *smells like* which we saw in examples 68, 69 and 70—the fragrance is introduced differently (almost personified in example 74) and *is honey*, rather than being compared to (*like*) *honey* the way that the *candy* fragrances are *like candy*. This suggests that reviewers are drawing on *candy* as an externalised point of comparison with which the fragrance is being identified, where *honey* is perceived more as a component in or ingredient of the perfume itself, reflected in the patters of collocation where *candy* correlated with language of comparison (*like*).

Honey and *sugar* do not have either *smells* or *like* as a collocate in the top 10 strongest collocates (outside of the top 10 *honey* does not collocate with either; *sugar* has only *like* as the 12th most likely collocate). Instead, both collocate with *with*, indicating that the structures exemplified by examples 72-75 are more frequent with *honey* and *sugar* than with the broader, category-level term like *candy*.

Moving on now to the SWEET words which do not directly describe sweetness, but do imply an association with it, Table 5.6 shows the 10 strongest collocates for *vanilla*, *caramel* and *chocolate*. As in Table 5.5 above, these collocate lists exclude any words which are present only due to the existence of brand names like Montale's fragrance *Chocolate Greedy*.

vanilla	with, sweet, tonka, amber, and, creamy, musk, bean, caramel
caramel	vanilla, popcorn, salted, sweet, gooey, praline, apple, like, sugar, burnt
chocolate	dark, white, cupcake, vanilla, coffee, bitter, with, creamy, patchouli

Table 5.6: 10 strongest collocates of *sweet*-adjacent words

Many of these collocates are not particularly surprising. As we saw previously in Table 5.5, especially with *candy*, the collocate lists are influenced by the presence of multi-word expressions like *salted caramel*, *caramel apple*, *dark chocolate* and *white chocolate*. There are also collocations here which do not indicate much of linguistic interest but do tell us about which perfumery notes and ingredients are commonly found together—*vanilla* and *tonka*; *chocolate* and *patchouli*.

Again we can use these collocates to see differences in the way olfactive descriptions are structured. *Vanilla* collocates strongly with *with*; and caramel with *like*. This indicates that vanilla is often mentioned in the context of other olfactive descriptors (this pattern is discussed in more detail in Section 5.4.2, on patterns of collocation with grammatical words like *and*), and caramel is often used as an external point of comparison like we saw above with

candy.

Vanilla

Vanilla is by some distance the most frequent word in the corpus which has an association with sweetness, and the most frequent FOOD word in the corpus overall. It is over 2.5 times more frequent than *fruity*, the second most frequent FOOD word, despite the fact that *fruity* is a much more general descriptor: *fruity* describes a broad category, where *vanilla* denotes a specific single note or ingredient.

Because it is so frequent, *vanilla* is seen in a wide variety of descriptions in the corpus. Some of the more interesting from a linguistic perspective are those like the examples previously given in the introduction to this section (p.100)—example 50 with *iced tea* and example 71 with *boardwalk cotton candy*, which elicit a more rounded situation with multiple relevant non-sensory pieces of information contributing to the olfactive description.

(76) This is a full-on vanilla and spicy amber scent. I would say it is gourmand. My husband says it reminds him of a two year old with birthday cake smeared on his face because it's so frosting-heavy. Duelle[5] is also linear—from first spray till hours later it is all sweet vanilla and amber. Good lasting power though. If you like sweet scents, this is for you.

In example 76, the vanilla and spicy amber scent is compared to a toddler messily covered in birthday cake. The association of vanilla with cake in general, and with *birthday* cake in particular, is interesting, and happens multiple times in the corpus. A birthday cake could of course be a chocolate cake, a carrot cake or a lemon cake, but the idealised, abstract birthday cake as it appears in the corpus describes a fragrance with a predominant vanilla note in each one of its 4 instances. Example 76 occurs within a full review of a fragrance which includes vanilla as a prominent note, but the sweetness and vanilla character of the fragrance is described within the review in a more abstract and creative way with the image of a messy, cake-covered toddler, rather than a detailed or analytical description rooted in the olfactive components of the fragrance. This creation of a fictional person or situation is a common strategy used in the corpus to describe a fragrance in a more abstract, synthetic way in contrast to the analytical description of particular ingredients or perceived notes which characterises most of the examples given in this piece of work. This descriptive strategy will

[5]The fragrance under review, *Eau Duelle*, produced by Dyptique.

be discussed in depth in Chapter 7, but suffice to say for the purposes of this chapter that linguistic communication of olfactory *sweetness* is not restricted to the use of strictly taste- or smell-linked language. Even in this context, we can see conceptual links between sensory modalities: this description uses strong visual and gustatory descriptions to communicate olfactory information, facilitated by the closely linked network of meaning around the sensory domains.

5.2.3 Spices and the 'botanical'

Moving on from the ambiguity of *vanilla*, there are two other spice-related words present in the top 20 most frequent Food words in the corpus (Table 5.1): *pepper* and *spice(s)*. The adjectival *spicy* is more frequent than both of these, with 301 tagged occurrences, but is not present in the table because it is consistently tagged within the Sensory: Taste category rather than the Food category investigated in this chapter. Taste and the other senses will be discussed in Chapter 6.

Below (Table 5.7) are the collocates of *spice*, *spices*, *cinnamon* and *pepper*, again as above excluding collocates which are part of fragrance/brand names and which have a frequency below 2. *Old Spice* is an interesting case here— while it is a brand name, looking closely at the concordance lines reveals some evidence to suggest that the term has become somewhat lexicalised, and is not used in the same way as (e.g.) the *Pink Sugar* we saw in Section 5.2.2. Detailed discussion will be given below, but because of this lexicalisation I have retained *old* as a collocate of *spice* in Table 5.7. I have also included results for *spice* and *spices* separately, rather than performing a general lemma search for both forms. There are two reasons for this: the first is that the collocate lists are very different (only three words, *warm*, *with* and *and* are present in both lists, and two of those are grammatical terms with little semantic weight). The second reason is that *spice* and *spices* have a difference in meaning beyond the simple count/plural difference. *Spice* can be a general mass noun with a rather broad reference— we do not know which, or how many, spices are being referred to, and the specific spices perhaps do not matter as much as the general concept of Spiciness. *Spices*, however, implies multiple discrete units, types or categories of spice which can be identified— this is reflected in the collocate lists, where the plural *spices* collocates with *cardamom* and *cinnamon*, but *spice* does not collocate with any named spices. (The only spice present in the full collocate list for *spice* is pepper.)

spice	bomb, hint, old, warm, cabinet, of, touch, with, and, onset
spices	and, with, cinnamon, cardamom, woods, some, the, herbs, resins, warm
cinnamon	cardamom, spices, cloves, and, with, apple, pie, honey, warm, spicy
pepper	pink, black, and, bergamot, Sichuan, cardamom, notes, nutmeg, rose

Table 5.7: 10 strongest collocates of *spice*-adjacent words

These collocate lists indicate several things about how spices are employed in olfactive description. The first is that we again see in these lists the existence of certain multi-word expressions (*spice bomb*, *spice cabinet* and *old spice*; *pink*, *black* and *Sichuan pepper*). The second is that these lists indicate common co-occurrences of certain perceived olfactive components, like cinnamon with cardamom, clove or apple; or pepper with bergamot or rose.

Pepper also collocates with a more technical piece of perfume terminology, *notes*. This indicates that reviewers are using *pepper* to identify perfume components in an analytical way, identifying certain elements within the structure of traditional perfume composition. Of the 29 instances where *pepper* collocates with *notes*, 7 of those are within reviews which are structured in a way which identifies the top, heart and base notes, like in example 77:

(77) top notes of blackberries, mango, **black pepper**; middle notes of wild orris, black lotus, jasmine; base notes of vanilla, patchouli, pink sugar.

Upon closer inspection of these examples in which *pepper* notes are explicitly listed, all of them are within the context of a quote from the perfume manufacturer's marketing material, in most cases given in support of a reviewer's disagreement with the notes listed on the fragrance's entry in the Fragrantica website. In the full context of example 77, the notes are listed 'per Vilhelm's[6] website' to evidence the reviewer's claim that the notes listed on Fragrantica are erroneous.

The pattern of collocation between *pepper* and *notes* indicates that *pepper* is something of a 'go-to' descriptor, an easily accessible term which is used almost as off-the-shelf descriptor common in fragrance marketing, rather than in a creative attempt to put an olfactive experience into words.

Another pattern we can see in Table 5.7 is that the fragrance brand *Old Spice* is commonly used as a point of comparison, as in examples 78 and 79:

[6]Vilhelm Parfumerie is the fragrance house which produced the perfume under review, *Mango Skin*.

(78) kinda gives me a fougere[7] or original **old spice** smell to be honest

(79) Somewhat of a clean Alcohol after shave splash smell with spices, (gives me a kind of **old spice** feeling) slight sweetness and plum

This is a specifically olfactory referent, with which the fragrance is being directly compared. There are still however certain cultural associative meanings evoked by *old spice*— in the US, the brand is often associated with older men, and this 'old-fashioned' or 'old-school' element is often employed by reviewers. In example 78 the reviewer is almost apologetic in their comparison ('*to be honest*').

Because spices themselves have a significant olfactory component— their purpose is to impart their flavour and aroma into food— olfactory descriptions which involve spices must be very literal. The descriptions involving spice and spices are very straightforwardly comparative, in that they are simply identifying a perceived aromatic component of the fragrance under review.

5.2.4 Fruits and citrus

By far the most populous type of Food words represented in the corpus is that of fruit. As we can see in Table 5.1 in the introductory section to this chapter, six of the top 20 Food words are fruits (*coconut*, *apple*, *lemon*, *bergamot*, *orange*, and the general *fruit*), and the general adjective *fruity* is the second most frequent Food word in the corpus as a whole. Within this fruit subsection of Food, citrus fruits are well represented with three of the most frequent fruits being citric. This likely reflects facts of perfume composition rather than anything linguistic (citrus oils are easily extracted and useful in perfumery to create light 'top' notes).

In Table 5.8 we can see the collocates of the six fruit-category words present in the top 20 most frequent Food words: *fruity*, *coconut*, *fruit*, *apple*, *lemon*, *bergamot* and *orange*.

The decision to include both *fruit* and *fruity* as separate entries here follows a similar logic to the separation of *spice* and *spices* in Section 5.2.3. The collocate lists are markedly different, and we see different lexical and semantic patterns when the adjective and noun are considered separately rather than looking at the lemma as a whole.

[7] A style of perfume generally aimed at men and characterised by lavender, geranium, oakmoss and wood (Turin & Sanchez, 2008).

fruity	floral, sweet, fresh, notes, very, a, opening, slightly, bright, juicy
coconut	creamy, vanilla, coconut, milky, beachy, milk, creaminess, tropical, the, sunscreen
fruit	passion, cocktail, sweet, citrus, gum, juicy, rotten, flowers, flavors, ripe
apple	pie, green, cinnamon, brandy, red, juicy, crisp, apple, note, caramel
lemon	bergamot, lemon, zest, orange, pledge, lime, verbena, with, balm, slice
bergamot	and, lemon, lime, pepper, mandarin, top, cardamom, notes, citrus, lavender
orange	blossom, blood, mandarin, orange, bitter, jasmine, creamsicle, peel, and, flower

Table 5.8: 10 strongest collocates of *fruit*-adjacent words

Again, many of these collocates simply tell us about the existence of certain multi-word expressions (*apple pie*, *coconut milk*, *blood orange*) and notes and ingredients which are often found together in perfumery (bergamot and lemon; orange and jasmine). We also see through the collocates some of how perfumes are structured: bergamot is often used as a *top note*; the *openings* of fragrances are often *fruity*.

The collocates of *bergamot* are the first time in this chapter where we have seen a Food word collocate with a piece of technical perfume terminology: *bergamot* collocates with both *top* and *notes*. These two collocates are often found together: of the 18 instances where *bergamot* collocates with *top*, *notes* is also present within a 5-word radius in 13. While a common ingredient in perfumery, *bergamot* is not a fruit which is easily available in the UK, or in the US where the majority of these reviewers are writing. It is unlikely to be something with which people can draw direct, experiential comparisons (with the likely exception of Earl Grey tea, which is flavoured with bergamot), and which they have instead come into contact with through experience with fragrance. This is reflected in the technical perfumery language used around the word in the corpus.

The repetition of *coconut* is interesting—why does *coconut* so often collocate with itself? On inspection of the concordance lines, this is often because when the word is used twice in succession, once refers to the fruit generally and once to a specific part or it, or a specific coconut product, narrowing the semantic reference of what particular type of *coconut* is meant:

(80) Sweet sugary vanilla **coconut**. Almost like a **coconut** body lotion

(81) A tropical drink in which **coconut** (or **coconut** liqueur) is present

Note however that there is something of a feedback loop effect occurring with the self-

collocation of *coconut* specifically, with each double instance of *coconut* essentially being counted twice because the search span is set to both before and after the word— each *coconut* is both a search term and a collocate. This pattern is not found with other self-collocates, like *orange*, which are usually specifying two different things (*blood orange* and *orange blossom*) rather than the second *orange* clarifying the first, as we see here with *coconut*.

The descriptive language which involves fruit in this section is similar in some ways to that involving other FOOD-related words discussed so far in this chapter. The difference with these fruit-related words is that they have a more direct experiential aspect to them: fruit is typically eaten as-is, without preparation or mediation or accompaniment, unlike things like pepper, caramel or vanilla. This allows the reviewer to draw on different perceptual and experiential aspects of eating the fruit in a way which is not possible with the examples discussed so far in this chapter. A reviewer can highlight the *juiciness* of a cherry, or the *tartness* of an apple: neither of these have an inherent olfactory value, but rather, because the sensory domains are so closely linked, serve to create a more evocative image through experiential knowledge of what it is like to eat these fruits. Highlighting one sensory aspect of the fruit in an olfactory-descriptive serves to also strengthen the evoked image of the fruit's odour.

5.3 Corpus analysis of PLANT words

5.3.1 Food or plant?

As discussed briefly in the introduction to this chapter, there is some amount of difficulty inherent in trying to separate out the categories of FOOD and PLANTS because they have such a significant lexico-semantic overlap. In Tables 5.1 and 5.2, we did not see any prototypically plant-related words in the top 20 FOOD words in Table 5.1, but we do see some prototypical food-related terms (*almond*, *coconut*, *apple*, *lemon*, *cherry*, *pear*) among the PLANT words in Table 5.2. This is mostly to do with collocation with *blossom* prompting the tagging engine to apply the PLANT label. *Apple*, *lemon* and *coconut* have all been considered in the previous section, but we have not yet considered in depth *almond*, *cherry*, or *pear*. Both *cherry* and *pear* usually have the FOOD tag as their primary one, except when they are immediately followed by *blossom*, but are not frequent enough to appear in the top 20 FOOD words in Table 5.1. *Almond* is always tagged primarily as a PLANT term throughout the corpus.

The table below shows the collocates of these three words, again arranged in order of

log-likelihood, excluding those present due to the existence of brand names like *Pear Inc.* and Jo Malone's *English Pear and Freesia*.

almond	vanilla, toffee, cherry, cookie, note, milk, powdery, and, blossom, notes
cherry	cherry, maraschino, blossom, cough, tart, air, syrupy, amarena, note, syrup
pear	note, juicy, the, and, notes, blossom, with, sweet, raspberry, tuberose

Table 5.9: 10 strongest collocates of food-adjacent words tagged as PLANT words

All three of these words collocate with *note*, a more technical perfumery term to describe aspects of a fragrance. These are not prototypical perfume ingredients like other terms which collocate with technical vocabulary, like *bergamot* above, but they are indicative of two very common odour molecules— almonds and cherries both contain benzaldehyde and pears contain a fruity-smelling ester, ethyl decadienoate. Both of these molecules are frequently used in perfumery (National Center for Biotechnology Information, 2024a,b; Poucher, 2000 [1923]). This particular pattern, where certain 'basic' perfumery ingredients or components collocate with more technical vocabulary from the world of fragrance, is explored in more depth later in this chapter, in Section 5.4.3, to allow a synthesised discussion of all the words which collocate with specialised vocabulary. First, I will analyse the language of the corpus around flowers, wood and leaves, before offering a broader synthesised discussion later in this chapter.

5.3.2 Flowers

Flowers are perhaps the most common and most prototypical perfumery ingredient. This is reflected in the preponderance of flowers in the top 20 PLANT words— 9 of the 20 are floral (*floral*, *rose*, *jasmine*, *lavender*, *flowers*, *blossom*, *iris*, *flower* and *orchid*), and as Section 5.2.4 noted, many instances of *cherry* and *orange* refer to the blossom of those trees rather than to the fruits. *Orchid*, while within the top 20 most frequent PLANT words, does not appear in the table below. This is because it does not have any significant (by measure of log-likelihood) collocates which are not part of brand names— the fragrances *Black Orchid*, *Ruby Orchid* and *Orchid Vanille* give those terms *black*, *ruby* and *vanille* as collocates, with other significant collocates including *tom* and *ford*: the name of the designer who markets Black Orchid.

As we saw in Section 5.2.4 on fruit, many of the collocates here simply indicate multi-word expressions (*cherry blossom*, *lotus flower*) or common combinations of ingredients in

floral	white, fruity, a, sweet, clean, fresh, powdery, notes, woody, musky
rose	rose, oud, jammy, it, and, with, saffron, pink, powdery, jasmine
jasmine	ylang, tuberose, and, blossom, orange, indolic, jasmine, rose, gardenia, sambac
lavender	and, vanilla, with, bergamot, mint, cardamom, my, lavender, notes, the
flowers	white, bouquet, of, yellow, and, fruits, with, purple, bloom, this
blossom	orange, jasmine, cherry, and, tuberose, centered, citrus, lemon, neroli, almond
iris	powdery, violet, iris, orris, it, lipstick, infusion, waxy, and, with
flower	white, orange, tiare *[Tahitian gardenia]*, stem, flower, lotus, yellow, garden, cactus, grasses

Table 5.10: 10 strongest collocates of *floral*-adjacent words

perfumery, like *jasmine* and *ylang ylang* or *iris* and *violet*, rather than telling us anything of linguistic value.

Like with *bergamot* earlier in this chapter, we see some technical perfume terminology here with the collocation of *floral* with *notes*. Unlike *bergamot*, *floral* is a very general descriptor which can be used to categorise a fragrance and describe it in a broader, more overarching way rather than to analytically identify a discrete component of the fragrance's profile.

Powdery appears alongside *floral*, *rose* and *iris*. *Powdery* is an especially interesting word to see in this context— it is a commonly used word in technical description of perfume (the Fragrantica site has editorial content dedicated to *powdery fragrances*), but when we examine it closely its actual descriptive semantic content is difficult to pinpoint. How can we experience powderiness— a textural sensation— purely through the medium of olfaction? Is this an example of cross-modal language, linking the sense of smell with lexis associated with the sense of touch, or is *powdery* a semantically weak technical term, being used to categorise fragrances rather than in an active attempt to describe and communicate the nature of a particular olfactive experience? Is the word exploiting olfactory associations by evoking memories of the distinctive fragrance of some brands of talcum powder? This point about how technical perfume vocabulary fits into discussion of the language of olfaction is explored in depth in Section 5.4.

In Table 5.10 there are also some interesting collocates with *rose*. *Jammy* occurs alongside (i.e. within a 5-word span of) *rose* 62 times, out of 101 total occurrences of *jammy*. Other flowers are not described as being *jammy*— in a search for 2-grams where the first word is *jammy*, the only other flower which appears in this context is *violet*, and upon inspection

the full context of this is the expression *jammy violet rose*. *Rose* is by some distance the most common term in this construction. Other *jammy* items include *cherry*, *grape*, *vanilla* and *truffle*, but each of these only occur once in the corpus. *Jammy fruits* occurs twice, and *jammy sweet* five times. *Jammy rose* occurs 31 times across the corpus, accounting for approximately a third of the 101 total instances of *jammy*. This is perhaps an unexpected pattern given that roses are not typically preserved as jam, outside of Eastern Europe. What is it about the smell of roses that makes it especially appropriate to describe with *jammy*? A potential explanation is that roses are one of the few flowers which are used in cooking and also in perfumery. It is therefore less of a sensory leap to describe a rose fragrance using a culinary word like *jammy* than it would be with a flower which is not typically used as an edible flavouring, like jasmine or violet. This highlights that the links between our senses within the dense network of sensory meaning are formed by experience— we have experienced the textural sensation of *jamminess* together with the odour and flavour of *rose* together in, say, a piece of Turkish delight, but such a link is unlikely to exist experientially with a non-culinary flower like *jasmine*.

A final floral collocate to discuss is *centered*, a collocate of *blossom*. This is an analytical term which describes how a fragrance is built and structured, and occurs in all of the *blossom* cases around *orange blossom*. Like we saw with *bergamot* above, orange blossom is a very common ingredient in perfumery, with a distinctive odour. Again, we see basic 'building blocks' of the fragrance world collocating with more technical, specialised vocabulary, like *bergamot* earlier in this chapter. This phenomenon is discussed in a more synthesised way with food and plant terms together in Section 5.4.3

5.3.3 Wood

A notable aspect of Table 5.11 below, which shows the collocates of those PLANT words which are related to wood(s), is the number of *oud* collocates which were removed because they were part of brand names. For other words in this chapter, only two or three collocates were removed for this reason, but for *oud* this number rose to well over half of the total— of the top 20 most likely collocates of *oud*, eleven are part of brand names, including *Oud Satin Mood* and *Oud Silk Mood* by Francis Kurkdijan, and *Oud for Glory* by Lattafa.

Again in Table 5.11 we see a number of collocates which tell us little linguistic information, but do show fragrance components or accords which are often used together, like *oud* with

wood	oud, guaiac, and, wood, chips, incense, with, notes, cedar, teak
cedar	and, sandalwood, cypress, vetiver, wood, cedar, base, dry, chest, notes
oud	oud, rose, wood, barnyard, hindi, saffron, Cambodian, leather, real, with

Table 5.11: 10 strongest collocates of *wood*-adjacent words

rose and *leather*, or *cedar* with *sandalwood* and *vetiver*.

The most semantically interesting pattern in Table 5.11 is the collocation of *oud* with *barnyard*. This is an actively descriptive word, rather than its other collocates which are either other fragrance components (*rose*), grammatical words (*with*), or specific types of oud (*Hindi* oud is more fragrant and potent than *Cambodian* oud). Performing a search for *barnyard** reveals that *oud* is the only perfume component which collocates with it (assuming no perfume houses are employing *dung* in their formulae). This is a similar pattern to what we saw with the *jammy rose* in Section 5.3.2— a descriptive term which overwhelmingly collocates with one specific fragrance ingredient or note. Looking more closely at how the word *barnyard* is used in the corpus, it is often used in a context to describe one of the more 'challenging' aspects of oud in perfumery, when it can be employed in such a way that it creates an almost fecal animalic odour which some consumers find unpleasant, depending on how it has been employed in a particular fragrance. We also see a similar pattern as *sweet*, where a large minority of the uses of *barnyard* are in the negative— the reviewer is reassuring the reader that while these fragrances have oud as a component, they are *not (too) barnyardy*.

Looking at the collocates of the wood terms as a whole, we also see a relatively high number of collocates which belong to the technical lexicon of perfumery compared to the other categories of Food and Plant words we have seen so far. *Notes* collocates with *wood*; *base* and *notes* with *cedar*. *Dry* can also be included in this category— in 13 of its 27 occurrences alongside *cedar*, *dry* is used in the expression *dry down*, a technical term for the character of a fragrance as it appears some time after application, once its more volatile 'top' and 'heart' notes have evaporated. Why do we see a higher number of technical perfume words alongside words to do with *wood*? A possible explanation is that generally we do not encounter the smells of different varieties of wood in day-to-day life, certainly not those woods which are grown especially for the production of fragrance, like oud. The knowledge of the different scent of *cedar* compared to *sandalwood*, for example, is therefore not as grounded in experiential knowledge outside the world of fragrance like the difference between the smell of a rose and

the smell of a violet. When we do encounter them is it not typically in a sensory context—unlike flowers, whose scent is a central aspect of their being, and food items, which are centrally experienced through their taste, the sensory aspects of wood are usually ancillary and incidental. This degree of removal from the sensory in day-to-day life means that when woods are experienced in the sensory context of perfume, it is more likely that they will collocate with the technical terms of how they have been experienced in this way.

5.3.4 Leaves and 'green'

A particularly interesting inclusion in Table 5.2 of the 20 most frequent PLANT words is *green*. It may appear that *green* more squarely belongs in the COLOUR AND COLOUR PATTERNS category, rather than among the flowers and woods of PLANTS. In 265 of its 325 instances in the tagged corpus, *green* is tagged as a PLANT tag in a tertiary position, behind the tags for COLOUR and GREEN [environmental] ISSUES. But close inspection of the language around *green* in the corpus makes it clear that generally a plant-related meaning is meant, with a part-for-whole metonymy allowing *green* to stand for a sensory comparison to plant life in general.

Two other words in the top 20 PLANT words, *herbal* and *garden*, can also be included in the loose 'other' category under investigation in this section. With *herbal*, we must again contend with the ambiguity between FOOD and PLANTS— *herb(s)*, which occurs 26 times in the tagged corpus, is consistently tagged with the FOOD category as its primary tag, where the adjectival *herbal*, which occurs 78 times, is consistently categorised as within the domain of PLANTS.

Below is the table of collocates for the three PLANT words from Table 5.2 which remain to be discussed.

green	fresh, notes, and, tea, apple, with, herbal, aromatic, floral, grass
garden	a, in, centre, walking, botanical, rain, shrub, spring, through, rose
herbal	green, aromatic, spicy, bitter, and, grassy, medicinal, tea, vegetal, sharp

Table 5.12: 10 strongest collocates of *green*-adjacent words

With *herbal* here we see another explicitly negative collocate, like *barnyard* above: *medicinal*. While the *waxy* of *iris* in Table 5.10 and the *cough* (usually followed by *syrup*) of *cherry* in Table 5.8 could be argued to be negative, close inspection reveals that this is not always the case: half of the eight instances of *cherry cough syrup* in the corpus are contained within broadly positive contexts, and *waxy* is used in context with a neutral valency, usually in comparison

to lipstick which is neither explicitly positive nor negative. *Medicinal* in an olfactive context however has a strong negative prosody. In reviews containing the word *medicinal*, the context is overwhelmingly often negative. This does not mean that the olfactive experience as a whole is being described as negative, however: in many cases, such as in Examples 82-84, the potential negativity of *medicinal* is used to highlight why the olfactive experience overall is a positive one: the reader has an expectation that a *medicinal* smell is an unpleasant one, and this expectation is exploited to highlight that the expected unpleasantness is not actually the case. This is usually alongside a disclaimer that the scent may be divisive— not for everyone, or 'only if you like this sort of thing'.

(82) I find it to be perfection from opening to ending. Starts citrus-fruity with grapefruit/guava. And then that **medicinal**/bandage note that doesn't last too long on me but is definitely present. For me, it's a ""weird"" smell I enjoy and I think it's so fun against the bright opening but I can see how others would hate it.

(83) It's not necessarily ~bad~ by any means, but it does has that camphor quality to it. Not a safe blind buy unless you know you love a **medicinal** vibe.

(84) And the **medicinal** note I can't get enough of is very powerful, which works for me.

In these examples, we see reviewers describing part of the olfactive experience as having the potential to be negative (*"weird"*; *not necessarily ~bad~*), but ultimately a positive contribution to their aesthetic enjoyment of the smell they are experiencing. This semantic distancing is highlighted by the reviewers' unconventional use of punctuation— *weird* is placed in two sets of double quotation marks, and *bad* between tildes. This usage highlights that they are not using these words to communicate their own ideas about the fragrance, but that they are instead pre-empting a potential criticism of the fragrance which might be levelled against it by others, and refuting it.

This type of usage—a broadly positive review which reassures the reader that the fragrance is *not* medicinal— is very much in the minority however, and most cases of medicinal are clearly negative:

(85) whatever that spoiled, **medicinal** smell hanging in the background was made me scrub it off

(86) Why oh why does it have that **medicinal** note. I mean it smells divine but then you get that hospital smell that lingers around and just refuses to disappear. So disappointing.

(87) Settles down into a weird **medicinal** vibe. Use this as insect repellent.

Words which collocate with *green* often indicate that *green* is generally used as a metonym for plant life generally. Of the collocates listed in Table 5.12, *herbal*, *floral*, and *grass* indicate this pattern. Two other collocates, *fresh* and *notes*, are typically used in contexts where a plant-based meaning is clear to further modify the specific olfactive component described, and how it relates to the overall olfactory experience.

(88) There is a hint of fig fruits at the beginning for me, but it's quickly overtaken by wet **green** crushed leaves. It's like the ""leaf soup"" kids make on the playground by pounding leaves into a pulp with sticks and rocks

(89) it's such a beautiful **green** fruity-floral that is absolutely perfect for spring

(90) Soft Lawn[8] brings a **green** grassiness. This is **GREEN**- almost parsley-like

This use of *green* is very different to the use of the other colour terms which were discussed in Chapter 4. In that chapter, colours were generally used either more figuratively, facilitating creative comparisons between the olfactory and visual modalities, or they were used simply to specify a particular variety of an olfactive referent (e.g. *red cherry*). In the case of *green*, we see a clear example of metonymy, where the greenness of plant life is used to stand for plant life as a whole. *Green* is also the only colour term which can be used alone as a direct descriptor for perfume— a fragrance can *smell green* but not *smell red*, for example.

5.4 Broader patterns

There are four main patterns we can see in the data for Food and Plants which are present through the different types of word, both to do with food and plants, explored in the previous sections. First, we see very low levels of any kind of figurative language with language from these semantic domains— most olfactive description around food and plants is based on straightforward comparison between fragrances and the real-world objects they smell like. Second, we see interesting patterns of collocation around the words *with*, *smells* and *like*, which

[8] A fragrance by the artisan perfume house Imaginary Authors.

imply that olfactive descriptions based on different odours are structured using different language. Third, and in a similar vein, we see that certain FOOD and PLANT words have strong patterns of collocation with the word *and*. Fourth, we see certain words (like *bergamot*, *pear*, and *almond*) which collocate with more technical perfume terminology like *notes* and *top*.

There are also some general patterns which we can establish through inspection of the concordances and contextual examples we have seen in the preceding sections. Looking back at Table 5.1, the most frequent FOOD words in the corpus, it is apparent that the food-based descriptors used in the corpus can be broadly categorised in two main ways. Some are used to describe certain qualities of the fragrance as a whole, characterising the fragrance (or parts of it) generally using food-related language. The second type of description relies on the analytic identification of certain (perceived) components of the fragrance, whether they be single ingredients like an extract of lemon, or more complex constructed absolutes which have been created to imitate the fragrance of (e.g.) honey, caramel or chocolate. Example 91 shows both these types, where the opening of the perfume is described as having a general peppery quality which is bolstered by the inclusion of bergamot as an ingredient.

(91) It opens up very peppery, supported by acidic, fresh bergamote

The *bergamot* in example 91 is modified by two adjectives in the sentence. The first is *acidic*, which in this semantic context is within the domain of TASTE. It is a more general term than *sour* or *tart*, for example, both of which are explicitly related to the domain of food and taste. *Sour* and *tart* are restricted to the description of food items (excluding less clearly literal meanings like a *sour mood*), where *acidic* can be used in a technical sense outwith that domain to describe substances or things with low pH like soil, rain and certain chemicals. However, of its 32 occurrences in the corpus here, *acidic* occurs in the context of food-based description in 24. In a further 4 cases, it is being used to describe something other than fragrance (e.g. *my skin is acidic*). These patterns of collocation suggest that *acidic* in the context of olfactive description is generally used cross-modally with its prototypical meaning rooted in the sense of taste, rather than to make comparisons with chemically acidic substances.

In Example 91, *bergamot* is also modified by the adjective *fresh*. In all its instances in the corpus, *fresh* is tagged with the category labels for OLD, NEW AND YOUNG; AGE, with the secondary tag given as JUDGEMENT OF APPEARANCE. It occurs with relatively high frequency in this corpus, with 4,781 occurrences. Taking a sample of 100 random occurrences, 36

of them are in food-descriptive contexts, with a further 43 occurring in a context of plant- and especially flower-based description. This is indicative of the wider relationship between the domains of FOOD and PLANTS explored throughout this chapter. While the AGE category is not included in the list of key semantic categories outlined in Chapter 3, this dual use of *fresh* in both food- and plant- descriptive contexts warrants further investigation and will be analysed in more depth in Chapter 7, in the context of the more narrative-based pieces of olfactive description present in the corpus, especially those based on the perceived age of certain descriptive characters.

Additionally, through looking at the concordance lines and contextual examples in the previous sections, we can use the theoretical constructs of metonymy and zone activation to establish some of the cognitive-linguistic mechanisms behind the language of olfaction contained in them.

In this section, I will discuss those first three patterns (the patterns in collocation of *smells like*; the terms which collocate strongly with *and*; and the collocation of certain words with technical perfume terminology like *up* and *notes*). The following section, Section 5.5, is then dedicated to an exploration of how zone activation and metonymy, especially whole-for-part metonymy, can be used to understand the olfactive language of the corpus.

5.4.1 *Smells like* and syntactic structure

In Section 5.2.2 on sugar and sweetness, we saw that *candy* has a strong collocation pattern with *like*. Inspection of concordance lines containing this pattern of collocation indicates that olfactive descriptions containing *candy* are often structured with the phrase *smells like*.

The only other word investigated in this chapter which displayed *like* within its 10 strongest collocates is *caramel*, also within the domain of sweetness. This tells us something interesting about how olfactive descriptions containing *candy* are structured— fragrances described in this way are directly compared to *candy* through simile.

What is it about *candy* that lends the word particularly to use within this particular syntactic structure? As discussed in Section 5.2.2, *candy* is a general, category-level term which can describe a wide range of items with different smells, from chocolate to bubblegum to caramel. It is the words which occur alongside *candy*, like *grape*, *cotton* or *citrus*, which provide most of the olfactive information. This is a similar process to that discussed with the word *beautiful* in Chapter 4— like *beautiful*, *candy* serves to provide an overarching 'theming' of the description

which allows the reader to build a more complete olfactive construal.

We can begin to unpick the problem of why *candy* collocates with this particular structure by considering which other words outwith the domains of FOOD and PLANTS collocate with the term *smells like*. These are given in Table 5.13, which excludes grammatical collocates like *is* and *this*, which are not relevant to this particular point. The search was performed to find collocates which occur within five spaces to the right of *smells like*, in light of the fact that this is the position in which any comparator will naturally occur.

smells like	soap, old, candy, shampoo, laundry, vanilla, baby, grape, mixed, bar

Table 5.13: 10 strongest collocates of *smells like*

A clear commonality between most of the collocates in Table 5.13 is that many of them overlap in conceptual space: *soap*, *shampoo* and *laundry* are all from the domain of cleaning and personal care, and also share a significant degree of olfactive overlap. *Old* and *baby* also share some degree of semantic overlap in that they are at opposite ends of a scale of human ageing, but in the context of the language of the corpus *baby* is almost always used either in the expression *baby powder* or to describe a fragrance in terms of two others, as *if they had a baby*. In 37 of 81 concordance lines of *old* as a collocate of *smells like*, the noun modified by *old* refers to a human being, like *old lady*. (These person-centred descriptions are explored in detail in Chapter 7.)

Somewhat paradoxically, many of these collocates of *smells like* do not necessarily have their own distinct odours in the way that some words investigated in this chapter, like *rose* or *orange*, do. While there is a degree of olfactive overlap between them, soap, laundry and shampoo vary in how they are fragranced and how they smell. They are also items which are related to the world of smell through their functions: all three items are used to clean things, removing malodours and making things smell pleasant (or at least not smell unpleasant) through the process of cleaning. Their odour is an essential part of their function, unlike other items explored in this chapter whose smells are ancillary aspects of their purpose.

Similarly, *vanilla* and *grape* are two of the most common food flavourings encountered in the US. These two odours are therefore very easily accessible as points of comparison, in that that are smelled frequently by an average person— *vanilla*, whether natural vanilla bean or artificial essence, is a common additive in baked goods like cakes and biscuits. Grape is a common flavouring for sodas and confectionery in the US. Because of this level of cultural

saturation, *vanilla* and *grape* are cognitively easily available comparators which can be drawn upon in the construction of an olfactive description.

A potential explanation of why such general olfactive items collocate with *smells like* is that *smells like* is one of the most simple syntactic structures available to a fragrance reviewer who wishes to linguistically structure their olfactive experience. It is possible that a corollary of this is that referents used to describe the olfactive experience are also similarly accessible. This is to say, descriptions using *smells like*, a syntactically simple construction, tend to refer to olfactively accessible objects for points of comparison. Deliberately fragranced items whose odour is a central part of the experience of interacting with them (*laundry* or *soap*), culturally salient odours (the concepts of *old person smell* and *new baby smell*, and the association of elderly women with certain genres of fragrance), and items which are flavoured (*grape*, *vanilla*) are all things which are at the forefront of our everyday olfactive interactions with the world, and some of the most easily accessible points of comparison for olfactive experience. This is potentially why they collocate with a more simple syntactic structure.

5.4.2 Collocation with *with* and *and*

Some of the most interesting patterns of collocation indicated in the sections above are around some of the most basic, most structural words in English. Why do words like *and*, *it* and *with* disproportionately occur alongside certain items, but not others? The vast majority of the words which have been covered by this chapter are grammatically similar— they are all nouns (the only exceptions to that being *creamy*, *fruity*, *floral* and *herbal*). They also occupy very similar places in semantic space, and occur syntactically in similar places in the sentences in which they occur. Why, then, do we see such significant differences in how frequently a basic grammatical word, like *and*, is used alongside some of them?

The words which include *and* or *with* within their 10 strongest collocates are *honey*, *vanilla*, *spices*, *rose*, *jasmine*, *flowers*, *blossom*, *green* and *wood*. With 20 words under close investigation in this chapter, that is just under half— what do they have in common?

The interesting thing here is that most of these words are very general, very common or category-level terms which denote a certain type of thing, and a certain type of fragrance. The exceptions are *honey*, *vanilla*, *rose* and *jasmine*, the latter three of which are all common, accessibly identifiable perfume ingredients. *Honey* is something of an outlier here— it is neither a generic, category-level term like *spices* or *flowers*, nor does it refer to a common,

basic perfume ingredient like *vanilla* or *rose*. It is however distinctive in its odour, and fairly easy to identify olfactively.

A further point to note here is that these words which collocate with *and* are among the most frequent in their respective semantic domains. This is because they occur in many descriptions, alongside a variety of different words: many fragrances may have a *fruity* element, but the next part of that description— *and X*— varies widely.

By closely inspecting the concordance lines in places in the corpus where these ten words collocate with *and*, it is possible to build a picture of why they do so. Consider examples 92 to 95, which all contain collocations of *rose* and *and*:

(92) It's heavy on **rose and** white florals

(93) I smell some **rose and** a lot of juicy peach

(94) But the **rose**, Saffron **and** Musk make it a good scent for warmer months often is

(95) **rose**, geranium, heliotrope, orange blossom **and** iris. Versatility is an a+.

The same pattern can be seen when examples which contain the word *with* are considered. In examples 96-99 below, *with* collocates with *vanilla* (*with* is the top collocate of *vanilla* across the corpus).

(96) fading to a spicy-**vanilla** skin scent **with** a hint of sandalwood

(97) spray but it settles to a very pretty orange **vanilla with** a hint of florals

(98) A creamy, sensual, **vanilla with** a touch of leather

(99) Warm amber-**vanilla** skin musk **with** a Play-Doh nuance, which isn't a bad thing

These examples illustrate the reason why we see these more basic, common fragrance terms from the domains of food and plants collocating strongly with words like *and* and *with*: the corpus contains a high number of reviews which share use of the common or categorical term, in the case of the examples above *rose* or *vanilla*, but the reviews then diverge on what the *rose* or *vanilla* is combined with. The olfactive experience is described with a more general term, and then the description is narrowed and made more specific by the addition of more specific vocabulary which occurs with lower frequency, leading to the emergence of these patterns of collocation.

5.4.3 Technical perfume terminology

As was shown in some of the previous sections, certain words have patterns of collocation with words from the technical lexicon of fragrance and perfumery. From across the types of food- and plant-related words explored in Sections 5.2 and 5.3, *bergamot*, *pear*, *almond*, *cherry*, *floral*, *lavender*, *blossom*, *cedar* and *green* all collocate with words like *note*, *top*, and *dry (down)*, terminology associated with the technical description of fragrance. *Blossom* also collocates with *centered*, which is not a specialised piece of lexis but which is used in this context to analytically describe the way in which a fragrance is structured, in much the same kind of way as *top*.

From the list of words which collocate with technical perfume terminology, we can see two distinct categories. The first, including *bergamot*, *pear*, *almond*, *cherry*, *lavender*, *blossom* and *cedar*, are all in some way prototypical, basic, common fragrance components. *Green* and *floral* are both common category-level descriptors for common fragrance ingredients or components. 'Components' is used again here in a broad sense, encompassing artificially composed fragrant accords which may not align with the actual ingredients in a fragrance—a perfumer using a *grass accord*, for example, may not use actual plant material in its creation.

Looking at this set of words, it is possible to see an important pattern in how technical fragrance vocabulary is employed in the corpus. The food- and plant-related words which tend to collocate with technical lexis are generally those most closely associated with the world of perfumery, in that they are mostly common or prototypical perfume components (*jasmine*, *bergamot*, *blossom*), or real-world sources of important aromatic molecules (*almond*, *pear*).

We can add weight to this explanation by looking at the terms which collocate with *notes* across the corpus, including those from outwith the semantic domains of FOOD and PLANTS, seen here in Table 5.14. The table excludes grammatical terms, because there is a large number of collocates like *the* and *it* which have a high likelihood of occurring alongside *notes*. Removing those from Table 5.14 makes clearer the point that words which are used descriptively alongside *notes* are generally either general category descriptors, or prototypical fragrance components.

If it is truly the case that the more prototypical fragrance components are the words which tend to collocate with technical terminology, we would perhaps expect to see those patterns of collocation with two of the most fundamental components in the world of fragrance: *rose*

notes	top, base, floral, middle, woody, green, fruity, citrus, individual, prominent, bergamot, blended, heart, aquatic, sea, spicy, jasmine, amber, woodsy, detect

Table 5.14: 10 strongest collocates of *notes*

and *oud*. But we do not see such a pattern in the collocation data for either *rose* or *oud*— we do not tend to see words like *note* occurring alongside either word in the corpus, despite the fact that both are central components in the world of perfumery. Looking closer at individual concordance lines in which each of these words appear, an explanation for this phenomenon emerges. In some cases, *oud* and *rose* themselves can act as pieces of technical lexis, metonymically standing for the whole fragrance of which they are a part: a rose-heavy fragrance is not said to have *rose notes*, but is referred to categorically as *a rose*. The same pattern can also be seen with *oud*, as illustrated in examples 100 and 101. Example 102 interestingly highlights that these terms can be combined, to describe a category or style of perfume centred around both ingredients.

(100) blind bough[t] it because I needed **an oud** in my collection

(101) **A beautiful rose**, lasts hours on my skin

(102) I expected it to be quite heavy but it is not heavy like **a rose oud** often is

Because *rose* and *oud* can themselves be descriptors which can be used to label or name a style of fragrance as well as to analytically describe its components, the patterns of collocation we see with other similar components are not repeated. Comparing *rose* and *lavender*, for example, it is possible for a fragrance to have *lavender notes*, but a fragrance with *rose notes* would not be described in such a way— it would be simply *a rose*.

5.5 Zone activation, metaphor and metonymy

Now that I have established some of the patterns around language to do with the semantic domains of FOOD and PLANTS in the corpus, this section will investigate how the food- and plant-related language is used to communicate olfactive experience, how this language works from a cognitive perspective, and what that means in terms of the relationship between the language of olfaction and cognitive processes of metaphor. The following pages will include discussion of examples from the corpus with particular reference to the linked concepts of zone activation and metonymy, which are key to the exploration of how words to do with food and plants are used to communicate olfactive experiences.

Fundamentally, there is a clear reason to approach the analysis of the FOOD and PLANT terms which appear in the corpus through the frameworks of metonymy and zone activation. When words from the domains of plants and food are used in the description of an olfactive experience, they are necessarily referring to things which exist in the real world, like roses or lemons. Roses and lemons do, of course, have smells, and those smells are the main part of what is being drawn upon when the word *rose* or *lemon* is used to describe an olfactive experience. But roses and lemons have countless other facets of their existence as well as their olfactive component. They have other sensory aspects like colours, textures, and tastes: the sourness of a lemon, or the red of a rose. They have other meaningful physical aspects: roses are beautiful, but have thorns which can injure. They have cultural and associative meaning: roses can carry romantic meaning; lemons can carry associations with picturesque coastal Italy. When those words are used to describe a smell, are users drawing only on the olfactive component of the rose or the lemon—is the item's smell the only activated zone—or are those non-olfactive facets of experience also important to the formation of a construal?

From the perspective of the language of the corpus, how much are these non-olfactive components of the referents which form part of certain olfactive descriptions drawn upon? Are they important when a communicative goal of the language is the detailed communication of an olfactive experience?

One way to investigate this question is to search the corpus for pieces of olfactive description where a non-olfactive aspect of a particular FOOD or PLANT term is explicitly highlighted. The presence of this kind of specific description would indicate that the non-olfactive components of the items described are activated during the formation of a construal, and form a part of the understanding of the olfactive description. When investigating this question, it

is important to bear in mind that some non-olfactive adjectives attached to FOOD or PLANT terms will in fact be employed to specify a different referent, rather than highlight a specific aspect of the object. In the phrases *red apple* and *brown sugar*, for example, the colour adjective is being used to specify a particular category or type of apple or sugar. But in the phrase *juicy peach*, the word *juicy* is highlighting a particular characteristic of the peach, rather than specifying a type or variety. The terms chosen to search must also not have any relationship with the olfactive component of the referent: specifying a *fresh apple*, for instance, has clear links to how the apple smells. An apple which is not fresh will begin to change in smell as it breaks down and its composition changes.

Looking at the collocates listed in the tables given for each of the words investigated in Sections 5.2 and 5.3 allows us to form a list of word pairs which fulfil these criteria: *warm-cinnamon*, *crisp-apple*, *lemon-slice*, *juicy-pear*, *sweet-pear*, *waxy-iris*. These pairs will serve as a starting point for the following analysis.

Searching for instances where *crisp* occurs within a 5-word span of *apple* yields 21 results. Of these, 8 can be discounted because the *crisp* is not modifying the *apple*, but instead describes the smell in general[9], refers to the dessert *apple crisp* or describes another identified component of the smell (in this case, cannabis), or was part of the named apple variety *honeycrisp*. Of the remaining 15 cases, three illustrative examples 103-105 are given below:

(103) I am smelling a luscious **crisp apple** and beautiful tea notes

(104) The opening is fresh, **crisp** fruity **apple**

(105) I love that this **apple** is **crisp** and not creamy

Looking at these examples, we see clear indications that the crispness of the apple in the description, part of its being which is not perceived through olfaction, is nonetheless important in specifying exactly how the imagined apple smells— as well as its olfactive component, the zone of meaning to do with its texture is being explicitly activated in these examples in order to communicate olfactive, not textural, information.

This can possibly be explained at least in part by considering the details of our experiential knowledge of the smell of an apple, and how it is encountered in our day-to-day experience. Before eating an apple, its flesh (where the volatile olfactive compounds are contained) is

[9]See Chapter 6 for a full discussion of how textural words like *crisp* relate to the language of olfaction in a general sense.

hidden under the skin, and the apple's smell is faint. But when we bite into it, and experience the crisp textural crunch, the volatile olfactive compounds are released and we experience the full sensation of how the apple smells, as well as tastes. The association of this crunch— the textual aspect of the apple— is therefore inherently linked to the experience of the apple's olfactive aspect. Explicitly activating this textural zone through use of *crisp*, like in examples 103-105, calls to mind our real-world experience of the apple and how we interact with its olfactive aspect in a concrete, experiential sense, making the language more clearly effective at communicating sensory experience.

Returning to Langacker's (1984) idea of zone activation as a process by which only certain facets of a referent are invoked in the process of the construction of meaning, it is possible to expand on this by viewing the concept in light of recent thinking in cognitive linguistics which foregrounds the role of experiential knowledge in the formation of a construal. While the explicitly activated zone when an item appears in the context of olfactive description is of course its odour, we necessarily experience an item's odour within certain experiential contexts. These real-world associations are important parts of the meaning communicated when a word like *apple* is used in olfactive description— invoking the *apple* necessarily invokes the whole experience of the apple, even though its olfactive aspect may be the most salient part of its meaning given the explicitly olfactive linguistic context in which the word appears.

Metonymy, especially whole-for-part metonymy, is another key aspect of how the language of the corpus around the domains of FOOD and PLANTS works. One of the most clearly apparent cases of metonymy within the semantic domain of PLANTS is the case of *green*. It is immediately clear that any use of *green* to describe an olfactive experience cannot be strictly literal— colours do not carry an odour. Yet *green* has a very high frequency in the corpus (2115 occurrences in total[10]), which places it within the top 150 most frequent words overall.

The colour green does not, of course, have any inherent olfactive component. How then can something *smell green*? Let us consider some examples:

(106) Fruity/green/woodsy scent with good longevity

(107) starts out green and floral then changes completely to give a nice sweet dry down

(108) almost too sharply green, like fresh cut grass on a hot summer day

[10]This total differs from the one given in Table 5.2 because it includes all instances of *green*, not just those tagged as part of the domain of PLANTS by the tagging engine.

In these examples, reviewers are essentially using part-for-whole metonymy to communicate that their olfactive experience has, in part, a plant-like quality. The greenness of the plants, a very salient aspect of their nature, is standing in these examples for the plants as a whole, so that the olfactive quality of plant life in general can be drawn upon to communicate a specific olfactive experience. Lots of things are green, however—how do we know that the *green* here is specifically the green of foliage and vegetation, rather than the green of, say, a pungent algal bloom?

First, we have the evidence of immediate collocation— in all three of these examples above, *green* is used alongside other plant-based words (*fruity*, *woodsy*; *floral*; *grass*), which makes a plant-related meaning of *green* apparent. We also have to consider our day-to-day experiential associations with the colour, and how they relate to our olfactive experiences. Even in dense urban areas, much of what we see of the colour green is plant life— houseplants in our homes and offices; grass, plants and trees in local parks and gardens; vegetable greens and herbs in shops. Most of these things are to some degree experienced through olfaction. These common and frequent associations lead us to the assumption that when we see the word *green* in the context of olfactive description, it refers to plant life rather than to another type of *green*, such as its metonymic association with sickness and nausea or its metaphorical use with regard to inexperience.

Example 108 is especially interesting— this fragrance is not only *green*, but *sharp green*. This particular reviewer kindly gives an example of what *sharp green* smells like: freshly cut grass on a hot summer day. This is not like the example of the *crisp apple* we saw above, in that our experience of plant-based *greenness* does not have an inherent aspect of *sharpness* to it. Rather, this is an example of cross-modal language where *sharp*, a word from the sensory domain of touch (and perhaps taste) is being used figuratively to modify the meaning of *green*. This type of language is discussed in the following chapter, Chapter 6, which discusses the degree to which terms like *sharp grass* and other cross-modal sensory language represent metaphorical inter-domain transfers of meaning.

Looking at the evidence discussed in this chapter as a whole, two things can be asserted. The first is that metonymy is used throughout olfactive description, and has a similarly important role to play in the communication of sensory experience. Many of the descriptive terms we see in the language of the corpus (chief among them *green*) are examples of part-for-whole metonymy, where the descriptive term stands in for one particular facet of the

source of the descriptor (in the case of *green*, plant life). This particular example of metonymy does however have an additional function: it serves to highlight a certain aspect of the whole which it evokes. In this case, it is the leafy aspect of a plant, not its earthy roots or wooded bark, for example.

The second point is that the evocation of experiential knowledge is a hugely important facet of olfactory description, and that the evocation of that knowledge is multi-modal in terms of the senses evoked. A description which highlights a fragrance's *juicy cherry* component uses the juiciness of the cherry— a sensory experience but not an olfactive one— to communicate a specific piece of olfactive information. This highlights the interconnectedness of the sensory domains: the network of meaning underpinning sensory language is a dense one.

This chapter has focused largely on source based description, i.e. descriptions which rely on comparing an olfactory experience to a real-world referent with a known olfactive identity. The main points which this chapter has established based on this data are twofold. First, experiential knowledge of the full sensory realities of a chosen descriptor is important in the communication of olfactive meaning. Second, in many cases, non-olfactive elements of the descriptor are highlighted by the reviewer, which indicates a close correspondence between the sensory modalities in the formation of a construal. The following chapter will now investigate this close inter-sensory, cross-modal relationship more closely with an analysis of language in the corpus from the domains of the senses themselves.

Chapter 6

The Senses

This chapter will focus on how the senses, with a particular focus on the sense of taste, are linguistically related to the sense of smell. As established in Chapter 3, other sensory domains are a primary source for olfactive description, and close analysis of how the language of these domains works is important for establishing the words and strategies that speakers use to communicate their olfactory experience. This kind of cross-sensory relationship is perhaps the most important to establish in terms of understanding one of the research questions posed in the introduction to this thesis, namely about whether cross-modal sensory language use can be said to represent a metaphorical transfer of meaning. This question is important for understanding the closely connected and dense semantic network underpinning sensory meaning, and whether this network can be said to be a contiguous domain of perceptual experience. This chapter is therefore crucial to answering the main questions of this thesis, and will do so within an analytical framework which mostly relies on the idea of synaesthetic metaphor, as explained in Chapter 2. The following pages will argue that cross-modal language use generally does not represent a metaphorical transfer of meaning, but rather that many sensory-descriptive terms have broad, cross-modal meanings which are applicable monosemously across multiple sensory modalities.

The traditional folk model of the 'five senses' is not an accurate description of how we perceive the world either physiologically or psychologically. As discussed in Chapter 2, contemporary researchers including Bartoshuk et al. (2019) and Winter (2019) advocate for a broader and more complex understanding of the senses as physiologically, and linguistically, interlinked modalities of perception, a position which I also take in this thesis based on the linguistic evidence available from the domain of olfaction.

The five-senses model is however deeply ingrained in how we *conceptualise* the way we perceive the world, and that conceptualisation is reflected in the language we use to describe our sensory experiences. Because the folk model is so universally accepted, its scientific validity is not especially relevant to the way it is employed in a cognitive linguistic sense—the way we understand our senses to operate informs the way we conceptualise them, even if that understanding is flawed. For that reason, this chapter will treat the 'five senses' of taste, smell, touch, sight and hearing as five separate entities for the purpose of corpus analysis, and then later in this chapter analyse the language of those different sensory modalities together, and consider the evidence for the ways in which those modalities are linguistically and conceptually linked. This treatment is complicated somewhat by the close physiological relationship between taste and smell, and the difficulty of delineating between them— see Chapter 2 for a full discussion of this physiological link, and the introduction of Section 6.2 for an explanation of how this link affects the linguistic corpus analysis later in this chapter.

This chapter will begin with a discussion of the senses of sight, sound, and touch, and how they are linguistically related to the sense of smell through an analysis of the olfactive descriptions in the corpus which employ sensory language. It will then move on to a deeper discussion of the linguistic relationship between taste and smell, which (as we will see as this chapter progresses) is the closest sensory relationship both physiologically and in the language of the corpus.

After this corpus analysis in Sections 6.1 and 6.2, Section 6.3 will discuss the relationship between olfaction and the other senses, especially taste, through the lens of metaphor. In this section, I will investigate how the concept of synaesthetic metaphor can be understood in the context of the corpus, and attempt to establish the degree to which olfactive description which incorporates phenomena experienced through the other senses can be counted as metaphorical language. A full theoretical account will be given in the introduction to that section (Section 6.3), but in brief the key concepts around which this chapter will be constructed are metaphoricity (which will allow for the theoretical basis that language can be metaphorical to varying degrees) and synaesthetic metaphor, both of which were discussed in Chapter 2 (Sections 2.3.3 and 2.3.2, respectively).

The five conventional sensory modalities—vision, hearing, touch, taste and smell—are represented to very different degrees in the corpus. This introductory section will explicate these broad differences, and illustrate how those modalities are realised differently in language.

Each modality will then be closely analysed individually and in turn to provide a clear understanding of how each is represented in the corpus, before a synthesised discussion of the five modalities together serves to investigate the nature of sensory language of the corpus in general, with a specific focus on theories of metaphor.

Category label	Frequency	Log ratio vs BNC	Examples from corpus
X3.1 Sensory: Taste	3166	5.28	*sweet, spicy, sweetness*
X3.2 Sensory: Sound	1786	-1.29	*loud, heard, splash*
X3.3 Sensory: Touch	322	1.88	*touch, rough, smoothness*
X3.4 Sensory: Sight	1420	-1.32	*blind, see, noticeable*
X3.5 Sensory: Smell	10295	7.79	*scent, fragrance, smell*

Table 6.1: Frequency and effect size (vs BNC written component) of sensory domains in the Fragrantica corpus

Table 6.1 shows the raw frequency and effect size of each sensory domain in the Fragrantica corpus. Effect size is measured by log ratio, using the written component of the BNC as a reference corpus. Unsurprisingly, by far the most frequent and most key sensory domain in this corpus is that of smell. This is followed by that of taste, then touch. The senses of sound and sight are underrepresented in the corpus compared to the written BNC, likely due to the fiction- and narrative-heavy makeup of that corpus, but there are nonetheless interesting linguistic patterns around these senses which will be explored in the following sections.

The sense of sight as a semantic category is even more underrepresented in the actual descriptive language of the corpus than Table 6.1 suggests. The most frequent words in this domain are *blind* and *see*, both of which occur in set figurative contexts. *Blind* occurs most often by some distance in the phrase *blind buy*, meaning a fragrance purchased without first smelling a sample. The few instances where *blind* occurs outwith this context are in *blind test*, where a reviewer has blindly compared (for example) an expensive fragrance with a cheaper imitator, and in *nose blind*, the phenomenon whereby after smelling a certain number of different perfumes the sense of smell becomes desensitised (discussed with reference to the domain of Anatomy in Chapter 4). *See* is overwhelmingly used within the conceptual metaphor understanding is seeing. Most of what is part of the sense of sight in a conventional sense does not in fact appear under this particular semantic tag: much in the same way that

SOUND	32
SIGHT	23
TASTE	20
SMELL	15
TOUCH	7

Table 6.2: Number of unique lexical items found in corpus for each sensory domain

items like *sugar*, *lemons* and *candy* appeared under the semantic tag FOOD rather than TASTE, sight-based concepts like colour and light exist within their own named categories rather than under the umbrella of the sense we use to experience them.

Another way to measure the significance of each of the senses in the corpus is to consider how many discrete word types exist in the data for each sense. By counting these words, it is possible to build a picture of how important each of the senses is to the language used in the corpus. Table 6.2 shows the number of unique lexical items that can be found in the corpus for each of the five sensory domains.

Some of this disparity in the lexical richness of each of the senses in the corpus is partially explained by the fact that each of the senses simply have different volumes of vocabulary in English in general. Because of the nature of the corpus, we would perhaps expect an overpopulation of SMELL words, but as discussed in the introduction to this thesis English has a very small pool of SMELL words for users to draw on. As a natural result of this lexical paucity, there is a hard limit on how high the SMELL value in Table 6.2 can be.

Although the available vocabulary in English to do with each of the senses has some bearing on the values in Table 6.2, these figures can still give valuable information about the importance of each sense in the language of the corpus. The two points of interest in Table 6.2 are the high number of SOUND words, and the low number of TOUCH words. I will explore what these words actually are in the following sections (Sections 6.1.3 and 6.1.2 respectively), but looking at the numbers here in Table 6.2 it appears that there is a relatively strong linguistic relationship between the senses of smell and hearing, and a relatively weak one between smell and touch.

When the data in Table 6.2 is compared with that in Table 6.1, the picture becomes slightly more complicated. While the number of unique lexical items to do with sound and hearing is high, that semantic domain is slightly underrepresented in the corpus as a whole.

In the following sections, I will consider each of the senses in turn and analyse how they relate to the language of the sense of smell. Particular space and attention will be given to the sense of taste, which has a complex and deep relationship with that of smell on both a linguistic and physiological level. Section 6.1 will explore the senses of sight, touch and hearing, then Section 6.2 will discuss the sense of taste in depth. Section 6.3 will then discuss what the linguistic relationships explored in the previous sections mean in the context of sensory metaphor, and how the sensory language in this corpus can be used to build on theories of synaesthetic metaphor and cross-modal language generally, and to advocate for the idea that the five traditional sensory modalities exist conceptually as a densely networked, contiguous domain of perception.

6.1 Sight, sound and touch

6.1.1 Sight

The linguistic relationship between the sense of sight and the sense of smell in this corpus has two main parts: the use of terms to do with LIGHT to describe olfactive experiences, and the use of COLOUR in a cross-modal, figurative sense to describe smell. Both of these were explored in Chapter 4, alongside other more clearly non-sensory semantic domains like CLEANING AND PERSONAL CARE.

The introduction to this chapter, in the discussion of Table 6.1, made brief reference to the fact that the two most frequent SIGHT words, *see* and *blind*, do not offer much in the way of fruitful analysis of olfactive description. *See* is often used as part of the standard and common conceptual metaphor UNDERSTANDING IS SEEING, as in examples 109 and 110:

(109) I can definitely **see** the comparison to Ombré de Hyacinth[1]

(110) I can totally see why people think this smells like nivea products

In other cases, *see* is used simply with a straightforward figurative meaning of foresight or prediction:

(111) I can **see** this quickly becoming a summer signature scent

[1] A green floral fragrance by Tom Ford.

See, then, while a very frequent word in the corpus, is not one which provides us with fruitful information about how the sense of sight is linked to the language of olfaction. Its most interesting use in this corpus is to introduce a fictitious (or in the case of Example 113, an imagined version of a real) person or situation which might relate to the fragrance being smelled; *I can see X wearing this*:

(112) I can *see* a young mother wearing this and hugging her little kids…

(113) I can see Mariah Carrey wearing this in the 90's

(114) the person i could see wearing this is a prestigious woman in a business meeting

In these examples, it is not the visual, sight-sensory language (*see*) which is doing the descriptive lifting— it is simply there to structure and introduce the fictional(ised) character which is being used to communicate the olfactive experience. A full discussion of this descriptive strategy can be found in Chapter 7, which is dedicated to exploring descriptions like those above which use character and setting to communicate olfactive information.

Similarly to *see*, *blind* also exists in the corpus almost entirely within a single metaphorical phrase: the *blind buy*. This refers to fragrances which have been purchased without first smelling a sample— the buyer has often taken a risk on the purchase, and examples of *blind buy(ing)* from the corpus are often in the context of warning others that the fragrance may be divisive (as in example 116). Of the 684 occurrences of *blind* in the corpus, *blind buy* (as well as *blind bought* and *blind purchase(d)*, or otherwise in a context of purchasing without sampling) accounts for 655.

(115) had it not been a **blind buy** and I'd had a chance to try it first then I probably wouldn't have bought it

(116) Not a safe **blind buy** – make sure you know what you're getting into

The second important use of *blind* in the corpus is to describe the phenomenon of olfactive fatigue which can be experienced when a certain volume of fragrance has been smelled over a period of time, and the sense of smell has become desensitised. This phenomenon is referred to using the phrase *nose blind*. Of the 29 instances of *blind* which are not to do with *blind buying*, a further 25 are in the context of nose-blindness (see Chapter 4). The four remaining are given in examples 117 to 120:

(117) People either don't realise or chose to turn a **blind** eye to the greed of some brands.

(118) If nobody told me this was an ADG flanker[2], I don't think I would have been able to tell in a **blind** test

(119) I decided to do a **blind** test for each, applying them without prior knowledge of name or brand

(120) This fragrance smells to me completely unisex (in the most literal sense) and could be very hard to place in a **blind** test.

In none of these instances of the two most common SIGHT words in the corpus, *see* and *blind*, are they used in a way which communicates olfactive meaning. To explore the link between the senses of sight and smell in a linguistic sense, it is necessary to consider specific examples of less frequent words to do with SIGHT in the corpus. *Blind* occurs 684 times in the corpus, and *see* 705 times. After this, as can be seen in Table 6.3, there is a noticeable drop in frequency to the next most common SIGHT words, all of which have less than 50 occurrences in the corpus, and few of which provide us with much valuable information about the cognitive-linguistic ways in which smell and sight are linked.

Some of the SIGHT words in Table 6.3 are not words which are used to describe olfactive experiences, but rather which are used to either structure the language of the fragrance reviews which make up the corpus (like *see*), or which are to do with the process of buying fragrances as a commercial product (like *blind*). Words like *look(ing)* and *notice* are not used directly in olfactive description, but are used metaphorically to describe *how* the olfactive items are experienced— *noticed* with the nose rather than with the eyes. This is something of an opposite to the usage of *blind* discussed above (and somewhat more obliquely in Chapter 4)— a word most closely associated with a sensory modality is being used in the context of an entirely olfactory phenomenon.

With these words to do with sight, we see some links between the sensory modalities of sight and olfaction. This is mostly to do with structuring language based on *how* olfactive elements are perceived, rather than any qualitative description of their nature. The clearest link between the domains of sight and olfaction is perhaps the link to colour, also discussed in Chapter 4. The language discussed there showed an especially clear link between the two

[2]An imitation (=*flanker*) of Armani's Acqua di Gio.

see	705
blind	684
noticeable	44
noticed	36
saw	32
seen	31
notice	25
looking	18
look	16
seeing	12
watch	9
blindly	9
scenery	5
peeking	4
invisible	4

Table 6.3: 15 most common SIGHT words

senses, including links between actual perception shown by experimental studies. Taken together, this forms strong evidence for a closely interconnected sensory semantics in which the sensory modalities are conceptually densely networked within a contiguous domain of perception, where sensory meaning can span across multiple modalities.

6.1.2 Sound

The relationship between sound and smell is a particularly interesting phenomenon. As well as having an observable relationship in the corpus under investigation here, there is a fairly systematic and clearly visible figurative relationship between the two sensory domains in the way that perfume is sold, marketed and discussed. This is particularly through the specific aural domain of music—perfumes have *notes* which can be *high* or *low*, and which can be *orchestrated* into *compositions*. Table 6.4 shows the 15 most common words in the corpus in the category of SOUND, which will form the basis of analysis in the following pages.

An important point which is not visible in the data given in Table 6.4 is that compared to the other senses the semantic domain of SOUND has a particularly high number of

loud	56
heard	29
splash	22
sounds	17
sound	17
hear	13
quiet	10
pop	8
silence	7
hearing	6
louder	5
silent	5
beat	5
dumb	5
listen	5

Table 6.4: 15 most common SOUND words

low-frequency lexical items—a large variety of words are used with low frequencies. This phenomenon was not apparent in the data for SIGHT, and as we will see in Section 6.1.3, is not apparent in the domain of TOUCH either. To illustrate, each of the following 22 SOUND words has a frequency of 3 or less in the corpus:

> *screeching, popped, bang, amplifies, amplified, pops, siren, echoing, muted, amplify, cacophony, pitched, hear, quiets, rustling, screeches, chimes, muffled, grating, blaring, listening, quietens, silences, jingle, creaky, breathy, chirping, popping, resounding, buzzing, loudest, chiming, quieter*

Looking from a quantitative perspective, SOUND is the sensory domain with the greatest number of discrete lexical items in the corpus, as we saw in Table 6.2. This list of low-frequency words accounts for approximately two thirds of the total number of SOUND words.

The high number of SOUND words strengthens the argument that of the linguistic links between olfaction and the other four senses, the relationship with hearing is one of the strongest and most systematic. This is especially interesting when we consider that there is

not a physiological link between the senses of smell and hearing, in the way that smell and taste are linked in the body (see Chapter 2).

Many of the SOUND words here are to do with volume: loudness or quietness. *Loud* is the most frequent SOUND word. Looking at its collocates, listed below in order of likelihood with a search window of 5 words either side, we immediately see an apparent negative prosody:

loud	*too, not, bold, vulgar, boisterous, annoying, demanding, face, quiet, it*

Every collocate here with the exception of *it* and *bold* indicates that *loud* is typically a negative descriptor in this corpus. *Annoying*, *boisterous*, *demanding* and *vulgar* are transparently negative collocates. *Face*, *not* and *too* are not immediately apparent as negative collocates, but upon closer examination we see that they occur alongside *loud* almost exclusively in negative contexts. *Face* as a collocate of *loud* exists only in the phrase *in your face*, in the following examples:

(121) so much but it's just too **loud** & **in your face**. Like someone blowing a vanilla cigarette in your face

(122) It isn't **loud** or **in your face** but it's definitely there

(123) well this is not as **loud** or harsh **in your face** coconut.

(124) in comparison to the more **loud** and **in your face** fragrances by the house.

The strong collocation of *not* and *too* shows an important pattern around *loud*: it is often used in the negative, to describe with a positive evaluation a fragrance that is *not* loud, or *not too* loud, as seen in examples 125 and 126.

(125) It's **not too loud**/overwhelming and it doesn't smell like something you'd only wear on a night out clubbing

(126) This one is lovely, bright, fruity but not too loud

In each of the *in your face* examples 121-124 above, *loud* is used to describe a negative olfactive experience. In Example 121, it is used to directly describe the reviewed fragrance as overpowering and unpleasant, but in Examples 122, 123 and 124, the fragrance is reviewed positively by virtue of *not* being loud.

We saw a similar pattern with *sugary* in Chapter 5, where the word is often used in the negative to favourably describe an olfactive experience that is *not (too)* sugary—a potentially unpleasant or overwhelmingly overstimulating sensory experience in the olfactory modality is directly compared to a more experientially accessible one in the modality of taste, or in this case, of hearing.

Looking simply at the concordance lines for *loud*, we also see a preponderance of *loud* occurring in a negative context.

(127) almost patchouli-like, but lighter and more powdery. (Thank God there's no **loud** patchouli.)

(128) I couldn't get on good terms with this perfume until today - on a freezing and sunny winter morning. The beautiful dominant green mango note - otherwise too **loud** - today just rocks it

(129) It sits close to the skin and has a calming effect, there's nothing **loud** or overt to it

If *loud* is so often used to describe a negative, unpleasant experience, does *quiet* have a conversely positive association?

quiet	*contemplative, soft, loud*

The collocates of *quiet*, given in Table 6.1.2, do not give us much information about the contexts in which *quiet* appears. *Loud* and *quiet* occur together only twice in the corpus:

(130) Si[l]lage is perfect. Not too loud but not too quiet either.

(131) the jasmine is just perfect in this scent - its not loud - its just ncie & quiet

In both of these examples, we again see fragrances described as *not (too) loud*. But Example 130 is the only instance in the corpus of *not (too) quiet*. That this pattern of *not too X* is generally used to reassure against a worry or sensory excess, rather than a worry that a perfume may not have enough of a certain characteristic.

From the patterns explored and the examples given in this section, we can see an interesting and close relationship between the sense of hearing and the language of olfaction. Three main points are as follows: first, that the most frequent word to do with hearing, *loud*, skews strongly negative— either negative olfactive experiences are described as being *loud*, or positive ones as *not (too) loud*. Second, SOUND is the most populous sensory domain in terms of

number of unique lexical items in the corpus, with a high number of low-frequency descriptive terms. Third, we see a link between sound and smell specifically through a systematic music metaphor which largely manifests in language around how fragrances are perceived to be constructed, *orchestrated* from *notes*. This is one of the few examples of cross-modal language in the corpus which does appear to be metaphorical, rather than extensions of a monosemous term across modalities. It is not, however, a direct comparison between sensory experiences, but rather between artistic products: olfactory experiences are not being described using words from the aural modality so much as perfumes as a product are described through correspondences with musical composition.

Taken together, these points indicate a very close conceptual relationship between hearing and olfaction, two domains which are not traditionally thought to be as close together as olfaction and colour, which are experientially linked, or olfaction and taste. This again points towards a very closely and densely connected space of meaning, with many strong conceptual connections between sensory domains, and words like *soft* with overarching perceptual meanings across a contiguous space of perceptual understanding. This pattern is also apparent in how *loud* is used outside of the olfactory context of the corpus: a brightly coloured garment or an especially garish design choice might be described as *loud*, showing that this cross-modal link exists from the modality of hearing not only to that of olfaction, but also to vision. Again, this indicates a densely interlinked conceptual space where words have meanings which extend across the boundaries of the sensory modalities, referring literally to meanings in multiple modes of perception in one contiguous domain.

6.1.3 Touch

As we saw in the introduction to this chapter in the discussion around Tables 6.1 and 6.2, the relationship between the sense of touch and the language of olfaction appears to be one of the weakest inter-sensory linguistic relationships. In terms of overall token frequency of TOUCH words, we see slightly more of them in this corpus than we would expect in general language (Table 6.1). But there are very few discrete types of TOUCH word in the corpus, with only 7 recorded (Table 6.2). These types are listed in Table 6.5. There are a total of 13 words given here rather than 7— the word lists in this chapter, including Table 6.5, include all forms of each word, not just the lemmas counted in Table 6.2, to facilitate a clear and full discussion of sensory language exactly as it appears in the corpus.

touch	98
touches	8
rough	7
smoothness	6
touching	4
caress	3
smooth	3
smooths	3
rougher	2
smoothed	2
smoothest	1
contact	1
tickle	1

Table 6.5: Frequency of all TOUCH words

The domain of TOUCH is very sparsely represented in the corpus. Most of the TOUCH-based vocabulary we see here, apart from the word *touch* itself, is to do with roughness and smoothness. *Contact* and *tickle* are each tagged as TOUCH words once, but do also occur in the corpus in different semantic contexts: *contact* is tagged as a SPEECH ACT three times, and as a GENERAL SOCIAL ACTION, STATE OR PROCESS twice; *tickle* is a GENERAL ACTION three times.

The two examples which contain *contact* and *tickle* tagged as TOUCH words are given below in examples 132 and 133. The very odd example 132 is the full review reproduced— it contains a further TOUCH-adjacent textural word, *abrasive*.

(132) As Slim used to sing, una Paloma Blanca AaaaaaAzzaro Chrommmmmme then go into an octave higher yodel. When you splash this scientific scent on some do yodel due to the affect of moist liquid coming into **contact** with human flash that most earthlings are lucky to have. You take it for granted. Enjoy this scent and your flesh exterior, thrown in is a secret listed ingredient known only to super intelligent human creatures with teeth similar only less braced. Tastes I mean smells like shiny chrome, only not the solid kind. A more **abrasive** yet nasal kind. They won't know what hit them when their two nostril holes inhale your covid free scent double dosed and boosted hopefully masked with William

Shatner mask

(133) as it progresses the scent takes on a feeling of oily warmth that sits well on the skin, with a smoky **tickle** behind it

However, there is some TOUCH-based language which is not tagged within the domain of TOUCH per se, but which we can see on inspection of another, closely related domain: TEXTURE. Like with SIGHT and COLOUR, and TASTE and FOOD, the domains of TOUCH and TEXTURE are very close to each other in semantic space— as we perceive food with our sense of taste and colour with our sense of sight, we perceive texture with our sense of touch. By searching the corpus for TEXTURE words and considering them alongside the TOUCH words in this section, we can build a clearer picture of how touch is linked to olfaction in a linguistic sense. It is important to bear in mind that while this analysis uses the TEXTURE data to inform understanding of how touch and smell are linked, TOUCH and TEXTURE are still considered here as separate semantic domains, just as FOOD was considered separately from TASTE.

Again in these examples we see a close conceptual and semantic relationship between the two sensory domains. Words clearly associated with the domain of TOUCH are used frequently and plainly to describe aspects of olfactory experience: they are monosemous in a perceptual sense, with a single sensory meaning that can apply to both the modalities of touch and of smell. Once again this points towards the dense and closely connected nature of the network of meaning underpinning the senses in semantic space.

6.2 Taste

While olfaction and the modalities of hearing, touch and sight are linked linguistically and to some degree experientially, the senses of smell and taste are much more closely and inextricably linked in both a cultural and a physiological sense. The sense of taste is experienced through direct contact of stimuli with the tastebuds, and consists of the five taste sensations sweet, salty, sour, bitter, and umami. In technical terms, this is the sole aspect of the sense of taste, but its popular conception also includes sensations caused by two other physiological pathways. The first includes sensations experienced through stimulation of sensory nerves, especially in the mucous membranes, by compounds like capsaicin (the compound which gives chillies their heat), piperine (found in black pepper), allicin (found in garlic), and sinigrin (found in mustard and horseradish), each of which chemically stimulates

certain chemosensory pain receptors to give a sensation of burning or heat, technically termed *pungency* (Prescott & Stevenson, 1995).

The rest of what is commonly referred to as taste, but is more accurately termed *flavour*, is experienced through the sensation of volatile molecules which travel backwards through the mouth, past the soft palate, and upwards into the nasal cavity. Here, these compounds interact with the olfactory bulb (the same sensory organ responsible for the sense of smell) in a process known as retronasal olfaction. The sense of taste as it is commonly understood is a combination of the sensations experienced through sensory receptors in the mouth and sensations experienced in this way through the olfactory bulb via those volatile compounds. These two sensations are combined to create the sense of taste, or flavour (Bartoshuk et al., 2019). Because the key sensory organ here, the olfactory bulb, is the same organ which is the source of our sense of smell, it is natural then that the semantic domains of food and taste are so well represented in a corpus of smell-related language— the two senses are closely linked physiologically, and this link is also realised through language.

As we also saw in Table 5.1 in Chapter 5, which shows the most frequent words from the domain of FOOD in the corpus, there is a bias in Table 6.6 towards sweetness. The most frequent TASTE word by some distance here is *sweet*, which is almost three times as frequent as the next most frequent, *dry*. *Dry* is tagged within the TASTE domain in the sense of not sweet, as in dry wine or cider, but most of its use in the language of the corpus is in the phrase *dry down*, the time when a perfume's volatile top notes have evaporated. In Table 6.6 also see the words *sweetness*, *sweeter* and *sugary*, three unambiguously *sweet*-related words, as well as *honeyed*. *Honeyed* is perhaps a degree of abstraction away from the prototypical *sweet*, in that it describes a particular real-world referent which is invariably sweet in taste but also has other properties of flavour (and of colour, consistency, etc.) which are not directly related to sweetness itself. Table 6.7 shows the collocates of these words to do with sweetness.

From these collocates, two main details about the language of sweetness in the corpus can be understood. The first is once again the basic inference of the perfume ingredients, and the external referents to which fragrances are compared, can be described as with words to do with sweetness— vanilla, baked goods, and candy. Similarly, types of fragrances which are *sweet* are also apparent here, with *gourmand*, *fruity* and *creamy* in the collocate lists.

The second key detail which can be gleaned from Table 6.7, which was also visible in the data explored in Chapter 5, is that the *degree* of perceived sweetness is often important in

sweet	1070
dry	379
spicy	287
sweetness	239
sweeter	91
smoky	91
bitter	82
delicious	75
sour	60
taste	53
sugary	48
salty	44
aroma	42
bouquet	39
tart	36
yummy	26
pungent	25
sample	24
tastes	16
honeyed	14

Table 6.6: 20 most frequent TASTE words

sweet	*and, too, vanilla, overly, fruity, creamy, very, not, gourmand, warm*
sweetness	*the, of, some, with, my, hint, tinge, and, slight*
sweeter	*than, version, more, and, creamier, becomes, fruitier, warmer, down, softer*
sugary	*sweet, vanilla, cookie, candy, donut, sugary, tuberose*
honeyed	*slightly, tobacco, waxy, buttery*

Table 6.7: Strongest collocates of *sweet*-related words

description of olfactory perception. When reviewers invoke sweetness in their descriptions, often they are commenting on an absence, slight presence, or overabundance of sweetness, indicated by collocates like *not*, *too*, *tinge* and *slight*. These collocations are illustrated in examples 134-136:

(134) Honey but not **too sweet**, Oud but not skanky

(135) There is a **tinge** of **sweetness** throughout the mid phase which I can only guess is being carried by the tonka

(136) It opens quite green with a **slight sweetness** from the fruit and cotton candy

This is similar to the pattern established with *loud* in Section 6.1.3 above, but with one key difference: where *loud* communicates something of the quantity of the olfactory experience, *sweet* communicates something about its actual sensory content. This is a further piece of evidence to suggest that sensory words have meanings which span across modalities: This pattern, where reviewers describe a fragrance as not *too* sweet, is discussed in depth in the following section in order to enable a synthesised discussion of examples which do this from across the sensory modalities.

Another category of terms which can be taken from Table 6.6 comprises evaluative words which evaluate the perceived enjoyability of a fragrance through words to do with pleasurable food: *yummy* and *delicious*. Their collocates are presented in Table 6.8.

yummy	*yummy, sweet, buttery, and, caramel, cake, comforting*
delicious	*smells, sweet, and, most, juicy, sexy, warm, unique, cake*

Table 6.8: Strongest collocates of evaluative TASTE words

These collocates tell us two things about how these more evaluative TASTE words work in the context of olfaction. Again, we see the essentials of the things that people find to be good to eat: things like cake, caramel and butter. The collocates of *delicious* in particular indicate something important about the breadth of its semantic reference. *Delicious* collocates with words from across sensory modalities. There are the expected words to do with taste (*sweet*, *cake*), but we also see words which are to do with sensory perception more generally, like *juicy* and *warm* which are textural and touch-based descriptors, and *sexy*, which is closely tied to sensory perception in a broad sense. This indicates that *delicious* is being used in a strongly cross-modal way. Its collocates do not suggest that it is being used mainly to describe any particular comparative referent, like *yummy*, but rather that it is being used to describe fragrances directly. While the prototypical meaning of *delicious* may be firmly within the gustatory modality, it is clear here that its meaning extends across the domain of perception

to be used to describe olfactive experiences as well. Close inspection of the corpus reveals that *yummy* is often used in this way too, directly describing the fragrance with words from the gustatory modality:

(137) It's a **yummy** and comforting scent that is not suffocating despite its sweetness

(138) This is very sweet, very playful, young sexy. . . .yummy.

These words are some of the clearest examples of cross-modal language use in the corpus: they are words which prototypically belong to the modality of taste, but whose meanings are used here to describe an entirely olfactive experience. Their use here, especially *delicious* which displays strong multi-sensory collocation, is a strong indicator that the sensory modalities are conceptually interlinked within a contiguous domain of perception.

The other words in the domain of TASTE given in Table 6.6 are very similar to many of the words which were analysed in Chapter 5, in that they indicate source-based comparators which are used to describe a fragrance by relating it to a real-world referent which it smells like.

There are additionally some words in Table 6.6 which do not strictly belong there for the purposes of the analysis undertaken in this chapter. The clearest is *sample*— in all of its instances in the corpus, it is used to mean a sample-sized bottle of a fragrance, rather than having any taste-based meaning. It is also possible that *dry* better belongs in another category, and it is consistently given a primary tag SUBSTANCES AND MATERIALS GENERALLY: LIQUID, with a negative marker (=*not liquid*). Perhaps because of its strong association with wine terminology, its secondary tag in approximately 75% of cases is DRINKS, again with a negative marker.

Two of the most interesting words in Table 6.6 with regard to category and domain boundaries are *bouquet* and *aroma*. Neither appears alongside the tag for SENSORY: SMELL, despite the fact that these appear to be fairly prototypical smell-related words. Perhaps their association again with the language of wine tasting has resulted in the tagging engine assigning them firmly to the category of TASTE, even though in wine tasting these aspects are perceived with the nose. This type of complication with reference to the tagging methodology is discussed in depth in Chapter 3.

In Table 6.6, two words have a clearly and strongly positive evaluative aspect to them (*delicious, yummy*). Conversely, some appear to be used in negative evaluation: *bitter* and *sour*. While these taste sensations are not inherently unpleasant (gin and tonics and whisky sours

are both enjoyable drinks), they do generally carry a negative connotation, as is especially apparent in figurative constructions like *bitter person* or *sour mood*.

So far, this chapter has performed a relatively straightforward corpus analysis based on the semantic domains of the senses, with little theoretical analysis. This has allowed us to establish how sensory language works in the corpus for each of the sensory modalities, and describe how each in turn interfaces with olfaction linguistically. The following section will now synthesise the sensory data together in a discussion of how the cross-modal correspondences represented in the language of the corpus, described by sensory modality in the sections above, relate to theories of synaesthetic metaphor and cross-modal language generally. The reason for this separate discussion, rather than integrating it into the sections above, is that the data presented in this chapter is key to answering one of the main questions posed by this thesis—the extent to which cross-modal sensory language can be said to be figurative or metaphorical. This question is best answered by first establishing the basic linguistic patterns around cross-modal language in the corpus, then providing a dedicated space for discussion of how these patterns relate to the idea of metaphor in a holistic sense. The next section will provide that discussion.

6.3 The senses and metaphor

As laid out in the analysis of the linguistic examples above, the ways in which reviewers employ cross-modal language in an olfactory context can vary greatly. In some instances where an olfactive experience is described in terms of another sense, the language used is a straightforward way where something experienced through another sensory modality is invoked with a direct comparison. In others, we see a clear example of cross-modal language use, where a word with strong links to a particular sense is used to describe an oflactive experience directly. There is an especially interesting middle ground between these two points, where the metaphoricity of the language used to describe the olfactive experience is not immediately clear, and warrants further analysis to establish the linguistic relationship between olfaction and the source domain in question.

These three cases are illustrated by Examples 139, 140 and 141 below.

(139) has that zesty **bitter** orange but I wouldn't compare it to an orange creamsicle

(140) you need to try it on skin to appreciate the warm, fuzzy accord (on card the myrrh falls **silent**)

(141) the mixture of orange and honey is **sweet** and **smooth**

In Example 139, we see this first kind of language: there is a relatively simple comparison being made, with no cross-modal transfer of meaning between the domain of taste and the domain of smell. The smell of the fragrance is being directly compared to the smell of bitter oranges (i.e. Seville oranges, the distinctive variety used to make marmalade). In Example 140, we see an apparently clear use of cross-modal language, where a word firmly from the domain of hearing is used to describe an olfactive experience. The myrrh in this fragrance is perceptible on skin, but sprayed on paper it is *silent*— imperceptibility in the auditory modality is being drawn upon here to communicate an equal imperceptibility from the perspective of olfaction. The imperceptible odour is communicated cross-modally through a word for imperceptible sound, like the examples discussed in Section 6.1.2 around *quiet* and *loud* olfactive components. In Example 140 we also see the myrrh described as *warm* and *fuzzy*, two words from the sensory modality of touch. This use is similar to the use of *smooth* in Example 141, and again we see words from one sensory domain, touch, being used to describe an experience entirely within the modality of olfaction. The question asked by this chapter, and a key question throughout this thesis, is that when words like *smooth* or *fuzzy* are used in this context, does this represent a metaphorical correspondence between the domains of touch and smell? Or does the word *smooth* simply have a broader meaning, which encompasses multiple modalities of perception? In the former case, this would indicate that the senses are separate enough as semantic entities to facilitate the transfer of meaning between them. In the latter case, where words like *sweet* have broader sensory meanings, this indicates a very closely linked semantic network which could in many cases be considered dense enough so constitute a single, contiguous perceptual domain.

Key to understanding this question is the difference between polysemy and vagueness, as explored by Geeraerts (1993) and discussed in Section 2.3.4. To restate the relevance which was established in that chapter, Geeraerts notes the 'unstable' distinction between vagueness and polysemy: words which appear from one perspective to have distinct meanings are examples of vagueness from another (Geeraerts, 1993, p.223). The relevance of this idea to the analysis in this present chapter specifically is to do with whether words like *smooth* or *sweet* are polysemous between sensory modalities— if the association with a particular 'source'

sense like touch or taste is an inherent part of the semantic structure of these words— or if they are represent examples of vagueness, i.e. terms which can be applied equally literally between different modalities of perception. In the following pages, analysis of examples from the corpus which show such cross-sensory language will be used to investigate this question, and establish the degree to which the language of the senses is semantically divided by sensory modality.

Geeraerts (1993, p.261) also makes the point that the distinction between polysemy and vagueness is highly contextual and dependent on the particular interpretation of the researcher, and questions whether the method of lexical semantics can be said to be truly objective. This was also discussed in Chapter 2, but it bears repeating here that the particular language under investigation in this thesis relies especially heavily on subjective interpretation. We do not have direct access to the actual meanings the reviewers in the corpus are trying to convey, in that it is not feasible to purchase all of the reviewed fragrances (many have been discontinued or reformulated and so are no longer on the market in their reviewed forms) and compare the olfactory referent with the language used to describe it. Analysis of this particular kind of descriptive language, of the kind undertaken in these pages, is therefore especially reliant on researcher's subjective interpretations, and the conclusions reached from that analysis must be read in that context.

Also crucial to the analysis in this section is the concept of *metaphoricity*, a term used to refer to the idea that the boundary between the metaphorical and the literal is not clear-cut and sharply defined, but at times fuzzy and ambiguous. This means that linguists are not necessarily faced with a binary choice as to whether or not a particular chunk of language is metaphorical— language can be metaphorical to degrees; some utterances can be more metaphorical than others. Metaphoricity is also helpful in cases of metaphor identification where the status of an utterance as metaphorical is unclear or ambiguous. As discussed in Chapter 2, Julich-Warpakowski & Jensen (2023) note that 'there does not exist a clear understanding of metaphoricity'; that the term has been used across the linguistic literature to mean different things in different contexts, and offer two concurrent meanings of the term: first, 'the state of being metaphorical (or not)', a categorical phenomenon, and second, as a gradable, scalar phenomenon: 'an understanding of metaphor that does not consider it a binary category but that allows for degrees' (Julich-Warpakowski & Jensen, 2023). It is this second use which interests us in the context of this chapter: the following sections will

consider examples from the corpus in light of metaphor as a scalar phenomenon, rather than attempting a binary categorisation of whether each particular instance 'counts' as metaphor.

This particular view of metaphor as a scalar and gradable, rather than entirely categorical, phenomenon has also been taken by others, including Semino (2008, p.14), who notes that 'it is generally recognized that metaphoricity is a matter of degree, and that the boundary between metaphorical and non-metaphorical expressions is fuzzy', and Gibbs (2015, p.164), who writes that 'the metaphoricity of any expression may not be all or none, and can more readily be seen as a matter of degree.' Adopting this viewpoint allows for a nuanced analysis of the concept of synaesthetic metaphor in particular, and means that the examples from the corpus given above can be analysed from the perspective of metaphoricity and cross-modal correspondence without drawing an unnecessarily firm boundary between what is and is not metaphorical.

The following section offers a discussion of the concept of the 'synaesthetic metaphor,' which describes figurative language involving correspondences between sensory domains. I will also outline how such cross-modal language is used by the fragrance reviewers in the Fragrantica corpus to communicate their olfactive experiences, and consider the degree to which such constructions can really be considered 'metaphorical.'

6.3.1 Synaesthetic metaphors in the Fragrantica corpus

While we have encountered figurative language in the examples analysed throughout the other chapters in this thesis, the focus of this chapter on the linguistic relationship between olfaction and the other senses allows us to consider more deeply a particular type of figurative language, the synaesthetic metaphor (see Chapter 2 for a full discussion of the particular terminology around this type of figurative language). This particular type of language involves a cross-modal correspondence between two or more sensory elements which can be described as acting as source and target domains— in the phrase *sweet melody*, for example, there is a cross-modal link between the senses of taste (*sweet*) and hearing (*melody*). Examples like this can be seen throughout the Fragrantica corpus, as detailed in the preceding sections in this chapter, with words associated with sensory domains used to describe experiences rooted in olfaction. With olfactive experience as the target domain for this sensory language, we see a variety of ways in which the other four traditional senses are used as source domains for descriptive language. In the following pages, I will use examples and data drawn from the

corpus, including those discussed within the context of their own sensory modalities in the earlier sections of this chapter. This will build on the theoretical discussion of synaesthetic metaphor in Chapter 2 in order to establish what a synaesthetic metaphor is and does in the context of the corpus, and then use this concept to analyse examples of cross-modal language in the Fragrantica corpus, establishing the degree to which language between domains as closely linked as the sensory modalities can be said to be metaphorical.

The corpus of fragrance reviews which this thesis interrogates is an especially useful resource for the close study of synaesthetic metaphor. The previous sections of this chapter provided an analysis of how the senses are linked linguistically in the context of talking about fragrance and olfactive experiences. This section will discuss and attempt to establish the degree to which these links can be said to be metaphorical, and what the existence of such a metaphorical link might mean in a cognitive-linguistic context.

The word *sweet* occurs 2,509 times in the corpus as a whole. Winter (2019) often uses the example of *sweet melody* to illustrate the synaesthetic metaphor— an aural stimulus (*melody*) is being described using a gustatory word (*sweet*). Winter concludes that this usage is not metaphorical at all, but rather is grounded in either the perceptual associations shared between words,[3] or in those words' evaluative, rather than perceptual, meanings (Winter, 2019, p.96). Winter quotes Rakova (2003) in his concluding analysis of synaesthetic metaphor, that 'all meanings of synaesthetic adjectives are likely to be their literal meanings'. Does this approach work consistently when it is applied to a corpus of olfactive language? Are all 'synaesthetic' adjectives used in a literal sense? The following pages will consider whether this viewpoint holds when we look at a large corpus of olfactive language, and whether it is possible to term metaphorical connections between domains which are closely linked, and share a number of perceptual components, as truly metaphorical, or whether their literal meanings extend beyond the boundaries of their 'home' modality across the sensory domain more broadly.

When looking at sensory pairings in synaesthetic metaphor, these can fall into one of two categories: correspondences between senses which are understood to be closely linked (smell and taste), and those between senses which do not have a significant physiological or lexical overlap (for example between smell and hearing). These each have different implications when we think of them in relation to metaphor: the closely linked senses highlight the fuzzy

[3]That is, the connotations and sensory correspondences in common between listening to pleasant (*sweet*) music, and eating an enjoyable sweet treat.

and unclear nature of the metaphorical-literal boundary, where the more distant senses can sometimes indicate more genuinely cross-modal mappings. Because of this, the following sections of this chapter will take these two types of language in turn: first, I will analyse how the use of TASTE words to describe olfactive experiences works in the framework of cross-modal language and synaesthetic metaphor. Then in Section 6.3.3 I will consider olfactive language involving the other three senses, as we saw in Section 6.1, but this time specifically in terms of this framework.

6.3.2 Taste and conventional phrases

As was discussed in Section 6.2, the senses of taste and smell are very closely linked in both a physiological and lexical sense. This means that expressions where words whose prototypical meaning are to do with taste or flavour are used to describe olfactive experiences, users are drawing on closely related experiential domains which are experienced through the same physiological pathways in the olfactory bulb. In light of this uniquely close sensory relationship, I will analyse taste-smell linguistic constructions in this section first before moving on to those involving sight, hearing and touch in Section 6.3.3.

Through the previous sections of this chapter, I have explored the close relationship between the senses of taste and smell, having closely considered examples from the Fragrantica corpus where olfactive experiences have been described using the language of taste, and in Chapter 5, the language of food. The aim of this section is to explore and clarify the degree to which that language of taste-smell correspondence can be said to be metaphorical. When we describe a fragrance as *sweet*, or *sour*, or *fruity*, are such phrases driven by the same cognitive-linguistic connections and processes which inform more clearly metaphorical odour descriptors?

It is difficult to see a robust argument that cases like, to take the simplest example (which appears only six times in the corpus), *smells sweet* are truly metaphorical if the source and target domains are so close together physiologically, experientially, and in semantic space. But *smells sweet* is a very straightforward example, using a basic and prototypical level of sensory language in a single gustatory adjective. It is necessary to analyse more complex constructions involving taste words, to determine whether every time a smell is described using a taste word, the taste word is always being used literally.

Part of this literal meaning could be said to be evaluative. Winter (2019) argues that

this is a significant driver of what is often termed synaesthetic metaphor—sweet foods are enjoyable to eat, and things described as *sweet* are thought of as similarly pleasant through association with our experiential, embodied knowledge of *sweetness*. The following section will unpick whether *sweet* is used in this way, to communicate evaluative meaning in the corpus, and establish whether this facet of meaning is one which is apparent in the context of olfactive description.

Evaluative meaning and *sweet*

There are two main ways that sensory language is employed to communicate meaning. The first is to communicate some specific quality of (in the case of this corpus) a fragrance; to describe aspects of the olfactive experience in varying levels of detail. The second is simply to perform an evaluative function—say, the positive associations of *sweet* are drawn upon to communicate a similarly positive evaluation of a sensory experience. This is very apparent in phrases like *sweet melody* which was discussed above, and which is used as an example often by Winter (2019), in which context the primary meaning of *sweet* is something like 'pleasant'. This makes sense in the context of the isolated two-word example, but in the context of the fragrance reviews which comprise the Fragrantica corpus, the picture is more complex. Of the over 2,500 instances of *sweet* in the corpus, only 9 have potential evaluative meanings, all of which are reproduced in Examples 143 to 152. The rest of the uses of *sweet* all have immediate contexts and collocates which make a more directly flavour-based meaning clear.

(142) It's so so different and unique and snuggly and **sweet** and warm

(143) I bought it on a whim because I thought the bottle was **sweet**

(144) she is not strong. She is not long lasting. She's soft and **sweet** and pretty

(145) Motherly, tender, innocent, **sweet**. But it doesn't make my heart beat fast.

(146) the **sweet** angelic scent ""yin"" to the femme fatale ""yang""

(147) If you're a **sweet** guy, wear this. I love it on a man.

(148) the girl next door: low-key yet good-looking, **sweet** yet strong, demure yet self-confident – in fact, exactly like Lenz' character in One Tree Hill

(149) she's cuddly and pretty. Not very edgy, but more **sweet** instead.

(150) To me it has become a favorite aunt, a **sweet** friend, a secret spot in the forest where I love to play.

(151) Short and **sweet** review

(152) A **sweet** nothing, really

Certain instances of *sweet* in the corpus can appear to have evaluative meaning in their immediate contexts, but it is important to check the context of the full review in these cases to establish which semantic aspects of *sweet* are drawn upon. Let us take Example 142 as an illustration: in the context given above, we do not see any collocates which imply a meaning to do directly with taste. In the context of the words which immediately surround it, *sweet* in Example 142 could be interpreted as an evaluative descriptor—the fragrance is 'snuggly,' 'warm' and generally *pleasant*. But when we look at the full context of the review from which this example was extracted, a taste-related meaning becomes clear:

> I bought this over a week ago and wanted to process my thoughts before reviewing. I'm not sure how I feel about it. I was looking for a soft powdery everyday fragrance. Jimmy Choo has been my signature for several years and I still love it but wanted something soft and sweet and cozy. One whiff of this and I bought it. The bottle is absolutely fantastic BTW. The scent is very polarizing... even for me lol. One minute I love it and cannot get enough, and the next I am nearly choking. It is **100% sweet POWDER** on me. I don't smell florals or anything else and I'm totally blown away by reviews saying it's only slightly **sweet**; on me it is so so **sweet**. It vaguely reminds me of **sweettarts**; it has that kind of **saccharin sweetness** but in powder form. It's almost thick... I think it it was a bit more sheer it would be fantastic. My teenage daughters hate it and said it smells like an old lady. I know powdery fragrances have that rep, but I do love a good powder. I'm just not sure if this is it. I am so disappointed because I wanted to LOVE this. **It's so so different and unique and snuggly and sweet and warm.** I'm debating on returning it because for the $ I want to love it and I don't have a huge perfume collection so it needs to be a love. This is definitely not a safe blind buy. I'm debating on ordering Valentina Poudre but will have to do it blind because I can't find it anywhere. I'm hoping that will give me the **milky sweet** powdery vibe I want without the choking effect.

Looking at the full context of example 142, it is apparent that the reviewer has established

a pattern of talking about the fragrance they are reviewing using *sweet* with its full taste-related meaning. We see a comparison to Sweetarts[4], and references to saccharin and milk— all very clearly food- and taste-related descriptions. Because of this established pattern of taste-related meaning, we can safely assume that the *sweet* in example 142 is a part of this extended description to do with taste and flavour, rather than having a simple evaluative meaning.

Of the rest of the examples of potentially evaluative instances of *sweet*, a few things are apparent which set them apart from the majority of the other examples of sensory language we have seen in this chapter. First, examples 151 and 152 both use *sweet* in the context of set phrases, where *sweet* does not carry significant semantic meaning in its own right. These are interesting uses of *sweet* which are certainly evaluative in nature, but they are not being used to describe the sensory, olfactive experiences of the perfume— their evaluative meaning is crystallised in the set phrases *short and sweet* and *sweet nothing*.

Examples 148, 149 and 150 are the most interesting in this set—they all use *sweet* not to describe the fragrance directly, but to describe a fictional characterisation of a person who embodies the same characteristics as the scent. (Examples 144 and 145 could appear like they potentially fall into this category too, but on closer inspection of the full review context the reviewer is talking about the fragrance directly, using *she* as one might for a boat.) Similarly, example 147 describes a person, a *sweet guy*, whom the reviewer associates with the fragrance, but this example is slightly different in that it describes the reviewer's ideal wearer of the fragrance rather than an anthropomorphised embodiment of or fictionalised character which is used to describe the fragrance itself.

Example 146 again uses a more evaluative *sweet* in the context of anthropomorphic (or in this case, angelomorphic) description. The *sweet* in this example does not communicate much of olfactory value, in that it does not occur in a context which suggests a flavour-based meaning like how example 142 occurs alongside items like Sweetarts. Here, *sweet* occurs in an angelic context, suggesting a more evaluative meaning of a sweet or pleasant nature rather than a reminiscence of sweet taste or flavour.

Example 143 is the clearest example of an evaluative use of *sweet* in this set of examples (and in the corpus), but it is not being used to describe a sensory experience at all— it is used to evaluate the quality of the fragrance's bottle, not the fragrance itself.

From looking at these, the only examples of *sweet* in the corpus where the word is not

[4] A brand of sweet-and-sour candy available in the US.

clearly being used in the context of sweet flavour, which themselves are ambiguous as to their relevance to actual sensory language, it appears that the use of *sweet* as solely an evaluative descriptor in olfactive language is very rare. We can see a similar pattern with other basic sensory words which can also carry evaluative meanings, like *bitter*. *Bitter* is used in everyday language in phrases like *bitter mood*, where a negative evaluation is a central part of the term's meaning. In the Fragrantica corpus, we see a similar pattern to that with *sweet*, with only a handful of potentially evaluative uses among its 208 instances in the corpus, and the vast majority appearing alongside words like *orange*, *chocolate*, *coffee* or *medicinal* which make a fuller, flavour-related meaning apparent.

A further indicator that *sweet* is typically not used with evaluative meaning in mind is the frequency with which reviewers mention that fragrances are *not too sweet*, or communicate meanings to that effect. If *sweet* were typically used evaluatively, this construction would have an entirely different meaning, that the fragrance was perhaps middling in quality. Instead, the frequency of this kind of construction indicates that a genuinely cross-modal, flavour-based meaning is the primary one when *sweet* is used in olfactory description.

In summary, the argument put forth by Winter (2019) that synaesthetic metaphor is often not truly metaphorical because it often simply draws on an experientially acquired positive/negative evaluative meaning of the sensory term is not borne out by the data in the corpus here. While the dataset used in this particular analysis is a comparatively small one, it nonetheless shows a variety of uses of cross-modal language beyond simple evaluative meaning in this particular linguistic context. A *sweet* fragrance is not just (and sometimes not at all) a *good* fragrance: instead, we see the full range of sensory meaning being transferred from the sensory modality of taste to describe olfactive experiences, rather than the basically evaluative transfer of meaning, which may nevertheless be more common outwith the specifically sensory-descriptive context of the language under investigation here. This pattern of fuller sensory transfer of meaning is clear when we look at basic taste terms like *sweet* and *bitter*, which are two of the strongest candidates to carry evaluative meaning, but which are used in this corpus to communicate olfactive information through correspondences with gustatory meaning with little evaluative aspect.

Shared aspects of perceptual experience

Now that is has been established that the vast majority of taste-smell cross-modal language in the corpus is not of an evaluative nature, but rather does carry significant sensory meaning, the question remains the degree to which that transfer of sensory meaning constitutes a process of metaphor. This is an especially complex question when the transfer of meaning is between such closely related perceptual domains—because taste and smell are so closely linked in a physiological sense, and as has been established in this chapter in a linguistic sense too, it is difficult to draw a line between one domain and the other. In light of this very strongly and closely interlinked relationship, I argue that it is neither truly possible or necessary to demarcate the two sensory domains, because they are facets of a larger and contiguous domain of sensory experience. Meanings of words like *sweet*, which are prototypically and centrally within the *taste* modality, extend into the linked sensory modalities in a literal sense, without a transfer of meaning in a metaphoric sense.

The crux of the argument against these terms being truly metaphorical is that smell and taste are two domains which are simply too close together, and have too much semantic and lexical overlap, to be able to have any meaningful mappings between them. Instead, we can think about the taste-smell synaesthetic language in the corpus as all coming from one contiguous perceptual domain. Using a taste word calls to mind the whole embodied perceptual experience, which involves olfactory input—we are able to take the whole perceptual experience of (e.g.) eating an apple, and apply whichever aspects of that are highlighted onto the experience of smelling a perfume. We are still experiencing, say, the *sweetness* or the *tartness* of the apple, but through the nose rather than through the mouth.

This analysis of the cross-sensory linguistic relationship between these two closely-related senses is a key piece of evidence in one of the main arguments of this thesis, that sensory language reflects a semantic sensory space which consists of a broad and contiguous domain of perception. Fundamentally, words rooted in one modality have meanings which can be literally applied to experiences in another. Where this section has specifically analysed how the domain of taste works in this way, the following section will now consider the remaining three senses, and attempt to determine whether this pattern still holds true for senses which are experientially and physiologically more distant from the sense of olfaction than the sense of taste.

6.3.3 Distant senses and unconventional phrases

In examples from the corpus where users are describing their olfactive experiences with sensory language that is not related to the senses of smell or taste, the case for this representing metaphorical language can at times be stronger. This is especially apparent when we see creative, unconventional word pairings rather than the more ordinary or expected pairings (like *smells sweet*) which we saw in most of the examples from the closely linked senses of smell and taste. When we look at examples in which olfactive information is communicated using vocabulary from the senses of hearing, sight and touch, a number of points become apparent which occasionally set these usages apart from those involving taste. There are two main reasons for this: first, the physiological closeness of taste and smell, which was discussed in depth in Section 6.2, naturally lends itself to a different linguistic realisation than the more distant senses of, say, smell and hearing. The second reason is to do with facts of perfume composition: things which can be tasted, and which most people have experiences of tasting, are frequent and actual components of fragrances. This is of course not the case for things which are experienced primarily through sound or sight: music cannot literally be incorporated into a fragrance in the way that, say, the flavour-giving oil of a lemon can.

Winter & Strik Lievers (2023) analyse synaesthetic metaphor from a perspective of semantic distance, and how that distance affects the metaphoricity of the metaphor in question. Their dataset consists of random sensory adjective-noun pairs (*smooth colour*, *warm scent* etc.), with metaphoricity ranked by a number of participants recruited online. This approach yields useful information about how different sensory modalities can combine linguistically, and how perceptions of metaphoricity can differ alongside the semantic distance of certain sensory modalities. These two-word pairs, however, are not necessarily representative of how sensory language and synaesthetic metaphor actually occur in the wild, and, divorced from their linguistic context, the meanings communicated by such pairs can be ambiguous. In Section 6.3.2, I discussed how the meaning of the word *sweet* was less clear in the context of its immediate collocates, and became clearer when we considered the full linguistic context of the review in which it occurred. In the case of example 142, earlier mentions within the same review of *Sweettarts* and *saccharin sweetness* suggested a clearer taste-related meaning than the more ambiguous, and seemingly more evaluative, meaning that was suggested by only the immediate collocates of that instance of *sweet*. It is important, therefore, to continue to consider the full linguistic contexts in which sensory language occurs.

6.4 Conclusions

The patterns of sensory language in the corpus investigated in this chapter provide strong evidence for our understanding of how the senses are related to each other in a semantic, cognitive sense. By closely investigating how experiences from one sensory modality, in this case, olfaction, are described in terms of the other sensory modalities, it is possible to begin to establish the conceptual relationship between those modalities, and how that relationship is manifested linguistically.

This relationship is apparent between olfaction and all four of the other conventional senses, albeit to different degrees. The relationship to sight is most apparent when we consider colour, as was discussed in Chapter 4. The domains of hearing and touch are also fairly well represented in the corpus, and words associated with each domain are often used to describe olfactive experience in cross-modal, but fundamentally literal, ways.

This chapter has established that the closest sensory relationship which is apparent in the corpus is between taste and olfaction. This is underpinned by a close physiological connection (in that the concept of *flavour* is really a combination of taste-based and olfactory stimuli) and is reflected strongly in the language of the corpus, where olfactory experiences are very frequently described in terms more closely associated with the domain of taste. This highlights the embodied nature of language, in that the two senses which are experientially the most closely linked also exhibit a similar closeness linguistically.

The evidence from the analysis undertaken in this chapter suggests, in line with previous work especially by Winter (2019) and Rakova (2003), that this kind of cross-modal sensory language does not typically represent metaphorical usage, but instead reflects that sensory adjectives do not have one specific 'home' domain. They may have a prototypical sensory meaning associated with a certain modality—taste in the case of *sweet*—but uses in other modalities represent extensions of this meaning within a contiguous domain of perception, not transfers of meaning from a source domain (Taste) to a separate and distinct target domain (Smell). That is to say that sensory words tend to have broad perceptual meanings, and their cross-modal use is in essence a literal one: *sweet fragrance* is no more a metaphorical construction than *sweet cherry*.

If usage such as this cannot be said to be metaphor— that is to say it does not represent a transference of meaning between separate semantic domains— then this indicates that the sensory modalities are semantically so closely interlinked and within a dense network of

meaning, such that they can be said to conceptually be part of one contiguous domain of perception. Within this semantic network, intra-domain, but inter-modal, correspondences of meaning can be made.

This chapter has built on the work done in Chapter 5 by investigating language which is adjacent to the world of food, but which is rooted in sensory perception and cross-modal description rather than the source-based descriptions analysed in Chapters 4 and 5. Those chapters provided most of the key evidence for two main arguments of this thesis: that the non-olfactive components of semantic schemata are important in the communication of olfactive meaning, and that much olfactory description relies on associative meaning. This chapter has mainly evidenced the third major argument, that cross-modal language use is generally literal in nature and indicates a contiguous semantic domain of perception. The analysis in all of these chapters has focused on relatively simple examples of olfactory description, which generally compare fragrances straightforwardly with fragrant objects and other sensory experiences in the world. The next chapter, the last of the main analytical chapters of this thesis, will now investigate more complex and creative examples of description, which employ linguistic strategies which rely on narrative-related elements like character and setting to communicate olfactive meaning.

Chapter 7

Narrative Elements

The previous chapters have explored examples of olfactive description which have generally communicated sensory information through conceptually straightforward comparisons. In most of the olfactory description analysed so far in this thesis, reviewers have made links, which are simple in structure if not necessarily in meaning, between the smell of a fragrance and something which that fragrance smells like. The comparator in these examples varies greatly in its levels of abstraction and complexity, including those straightforward comparisons between olfactive descriptors and perceived components of the fragrance (e.g. *I am smelling a luscious crisp apple* in example 103, which was presented in Chapter 5) but also including more abstract descriptions rooted in associative and connotative meaning, like those to do with physical appearance and sexual attraction explored in Chapter 4.

But in many of the reviews which comprise the corpus, olfactive description is constructed in a more complex way which relies even more heavily on associative meaning, and employs certain narrative-related elements like characterisation and the evocation of place in order to communicate sensory meaning. This chapter will explore examples which rely on these elements of narrative construction in order to evoke more complex sensory schemata through which they communicate olfactive meaning. Analysing these examples separately in this chapter serves two purposes. First, it would be difficult to fit them into the discussion in the previous chapters for structural reasons. The previous chapters have been structured by semantic domain in order to build a clear picture of the domains from which olfactive language originates, and to clearly identify the different semantic processes motivating their use. This allows one of the key research questions outlined in Chapter 1 to be comprehensively answered in a clear way. The language analysed in this chapter generally draws upon multiple

domains simultaneously to generate more comprehensive, fleshed-out descriptions. Because it would not be possible to assign such descriptions to a single constituent domain, it is necessary to analyse them separately in this chapter.

The second reason for keeping the longer, more creative examples of olfactive description separate in this chapter is that this kind of creative association is a distinct and clear linguistic strategy which reviewers use to communicate complex sensory information. This chapter is therefore key to understanding how this strategy works and is constructed, and will analyse these examples in order to answer the central question of this thesis which asks about the nature of the strategies which speakers use to describe olfactory experiences in light of their perceived ineffability.

Descriptions which are rooted in narrative elements have some degree of overlap with the kinds of semantic patterns seen in earlier chapters: for example, in Section 4.1.1, on appearance and sexual attraction, the descriptions were often couched within a characterisation of an imagined person with traits the reviewer deemed to be attractive. In Chapter 5, many of the examples which included the word *green* specified the green of a place like a forest or garden. In those earlier chapters these examples shed light on how the semantic domains they belong to are used in an olfactive context, but by systematically investigating the cases of olfactive description which rely heavily on this particular descriptive strategy, it is possible to shed light on how complex sensory information is communicated linguistically, and how olfactive information in particular is semantically parsed and understood. This type of description is broader and more general than most of the examples discussed so far in this thesis, in that rather than attempting to describe a particular note or facet of a fragrance, they attempt to describe a broad impression of the fragrance as a whole. Because of this pattern, where reviewers focus more on 'broad strokes' description rather than a more analytical parsing of the olfactive components of a fragrance, there are closer links between these descriptions and the fragrance as a commercial product rather than as a sensory experience. The stories people tell in their descriptions have strong links to the kind of imagery we see in fragrance marketing and advertising, for example the use of sexual imagery and iconography to do with aspirational or wealthy lifestyles is common both in the pieces of description analysed in this chapter and in much fragrance marketing.

This chapter will take a different methodological and analytical approach from that which we have seen in previous chapters. Where Chapters 4, 5 and 6 relied on a heavily

data-driven and quantitative corpus analysis, this chapter takes a more qualitative approach rooted in discourse analysis. Key to the analysis in sections 7.2 and 7.3 is the concept of the schema: a general structure which represents knowledge about the general form of a certain concept. The terminology in this area is complex and different terms (*frame*, *script*, *scenario*) are used for overlapping concepts in different disciplines like psychology, artificial intelligence and sociology (Sullivan, 2023). *Schema* is used here as an overarching term for a range of knowledge structures (see Emmott & Alexander (2014)) which supply background knowledge necessary for the understanding of a piece of text. Schemata are important in the context of the kinds of descriptions explored in this chapter because many of the examples which we will see do not explicitly mention any olfactorily significant component, and rely on the reader's experiential knowledge and pre-existing schemata to fill in the 'missing' olfactive knowledge which is inherent in the description.

These are much larger, broader and more complex units of experiential knowledge than those which have been referred to so far in this thesis. The language investigated in previous sections has relied on the evocation of sensory experience to some extent, especially the food-related examples in Chapter 5, which invited the reader to imagine eating certain foods and highlighted certain sensory aspects of that experience, and the examples to do with attraction in Chapter 4, which relied on the reader's experiences of what makes a person attractive. The examples considered in this chapter invoke much more complex networks of cultural and referential knowledge through making associations with different types of person and place with which the reader may or may not have any actual real-world experience.

The different methodological approach taken in this chapter compared to the more corpus-driven analysis in Chapters 4, 5 and 6 is useful for two main reasons. The first is that it allows for analysis on a more macroscopic level than the more close-up collocational analysis of the earlier chapters, and facilitates an investigation of how reviewers' sensory language is put into words at a more holistic, conceptual level. A more qualitative methodology allows the inspection of larger chunks of text— in some examples in this chapter up to the level of the whole review— rather than only the immediate co-text of keywords, and therefore can be used to build a clearer, fuller picture of how reviewers' olfactory experiences are being rendered through language, and the semantic processes which motivate that communication. The second reason for adopting a more qualitative approach in this chapter is that while the previous chapters dealt with the frequent and key semantic domains in the corpus in a robust

and systematic way, and interrogated examples of olfactive description through that structure, there remain important linguistic patterns in the data which do not fit within that explicatory framework. The looser and less comprehensive qualitative methodology adopted by this chapter strengthens the overall analysis in this thesis by affording the freedom to analyse examples which display these important patterns. Because of this it is therefore possible to build a more detailed and clearer picture of how language is used to communicate the complex olfactive experiences which reviewers describe, and of the semantic makeup of those descriptions.

The following section describes how the corpus was searched to find instances of this kind of narrative-based description, forming a dataset of concordance examples, consisting only of reviews which contain such examples in some way. Then, Sections 7.2, 7.3 and 7.4 contain an analysis of those examples: first those to do with character, and then those to do with place and setting, followed by those more complex examples which weave both together into fuller narrative descriptions. Section 7.5 offers a synthesised discussion of the patterns established in the previous sections and what links them together, and how the linguistic evidence presented in this chapter supports the conclusions of this thesis around the importance of associative meaning in olfactory communication and the semantic nature of the senses as a contiguous domain of perception.

7.1 Methodology

For this chapter, a different methodological approach is required than the one employed in Chapters 4, 5 and 6. Because the purpose of this chapter is to understand how narrative elements like place and character are used to communicate olfactive information, it is necessary to first collect a representative sample of reviews which contain this type of description—description which relies on comparison to a real or imagined person or place in order to communicate information about a sensory experience. The previous three chapters employed a robust and systematic corpus-driven methodology, which allowed for an equally systematic and comprehensive investigation of the olfactive language of the corpus. The analysis in this chapter is less comprehensive and driven more by close analysis of specific examples from the corpus in order to build a picture of how character- and place-based descriptions are used to describe sensory experiences. Because these examples in this chapter particularly

reflect the idiosyncrasy and creativity of the communicative genre under investigation in this thesis— posts on a public online medium— there is a focus in this chapter on analysing and understanding specific cases of unusual, surprising and creative ways in which people communicate olfactive information rather than building a comprehensive and complete data-driven picture.

Two search techniques were employed to extract character- and place-based descriptions from the corpus data. The first is similar to the search strategy used in previous chapters, relying on semantic tagging to identify reviews which include mention of people and places. The second method involved searching the corpus for personal pronouns, which indicate the presence of a person in the text.

A third search technique was attempted, but did not result in the creation of a useful dataset. In that methodology, an initial random sample of 100 reviews from the main corpus was collected and manually combed to find examples of narrative-based description. The intention of this preliminary search was to ascertain whether a methodology based on random sampling was capable of generating a sufficiently representative set of such descriptions. If the density of such examples was great enough within the sample of 100 reviews, it would then be possible to manually sift through a greater number of randomly selected examples to produce a sufficiently sized and sufficiently representative dataset for analysis, using random sampling to produce a collection of examples without generating unintentional biases in the dataset through using only specific search terms.

Of the 100 randomly selected examples, only 2 contained any narrative-based description, which is too low a density to make manual combing of a sample of the corpus a suitable method for finding such examples. Doing so would necessitate manual reading of a quarter of the corpus, so the methodology outlined here is significantly more efficient, yet still able to produce a dataset which is sufficient in size and representativeness to provide useful linguistic evidence.

7.1.1 Searching semantically for people

To find instances of character-based description, the main technique employed was to search for nouns in the corpus which have been semantically tagged within the categories of People: female and People: male, returning reviews which mention people in some way. These words are given in Table 7.1, alongside the total number of examples which contain character-based

olfactive description using those words. These totals are lower than the raw frequency of each of the search terms because many instances of each word do not occur in the kind of descriptive character-related context analysed in this chapter, and those examples are not included in the final dataset. (Detailed description of the process of filtering the search results is given below.)

The search was performed by filtering the full review data on which the corpus is based by the keywords in Table 7.1 (the words within the categories People: male and People: female which occur at least once in the corpus) to produce a preliminary dataset of all reviews which contain these words. That dataset was then manually sifted, and reviews which contain character-based olfactive description were extracted to form a set of 121 examples.

As well as the gendered People: male and People: female categories shown in Table 7.1, preliminary searches were also performed including the categories People and Kin, but these categories did not yield useful results. People includes words with broad meanings to do with humans generally (*mankind*, *humanity*, *adulthood*) or which are used in the context of the corpus to describe aspects of a fragrance's perceived or marketed gender bias (*unisex*, *gender*, *androgynous*), and none of these terms were associated with any character-based description. Kin is used to tag words describing familial relations, and the only words in that category which appear in person-based description in the corpus (e.g. *mom*, *brother*) are also included in the gendered People categories in Table 7.1 due to the presence of secondary and tertiary tags.

Filtering the dataset

Most of the instances of the tagged terms in the categories of People: female and People: male do not occur within the kind of character-based description which interests us in this chapter. In light of this, it was necessary to filter the initial dataset obtained through the search methodology outlined above such that the dataset contained only examples of olfactive description which employ character-based description. This was done manually, by checking each example in the initial dataset and extracting only those which clearly contained an instance of such description.

Such examples often refer to people in real world, rather than having any part in sensory or olfactive description. This is usually a simple reference to a person in the reviewer's life, perhaps sharing their opinion on the fragrance (as in example 156). In other cases, the words

PEOPLE: FEMALE	# of descriptions	PEOPLE: MALE	# of descriptions
woman	30	men	0
girl	16	man	7
women	2	boy	1
lady	26	guy	2
mom	4	boyfriend	0
ladies	2	gentleman	5
sister	1	brother	0
femme	3	father	2
goddess	0	gentlemen	0
girlfriend	3	king	0
dragon	0	lord	0
princess	0	fellow	0
madame	0	earl	0
whore	0	master	0
cow	0	playboy	1
dame	0	sheikh	0
duchess	0	chaps	0
queen	1	fella	0
witch	0	monk	1
actress	1	cowboy	2
chick	1		
mistress	0		
soprano	0		
siren	0		
ballerina	3		

Table 7.1: Search terms from domains PEOPLE: FEMALE and PEOPLE: MALE

fulfil some other linguistic function, like the use of *man* as an interjection in example 154:

(153) I have no idea how a **man** could pull this off.

(154) Ooooh **man** ... this is something special!

(155) it isn't unisex, unless you are a **woman** who likes to smell masculine

(156) My **boyfriend** bought me this as he loved it on me when we were in the shop, although I thought the cardamon and tobacco were strong

Examples like this were all removed from the dataset because they do not communicate olfactive information through character, and thus do not contribute to the aims of this chapter.

Some examples which were removed from the initial search in the formation of the final dataset involve references to people in the world who might wear a certain fragrance:

(157) But be warned, if this is your signature scent, you may end up smelling like an **ex-girlfriend**, **mother**, **aunt**, **sister**, etc. (again, it's just that popular)

(158) my **husband** wears Wood Oud[1] most of the time, and we both love that

Example 157, which gives a warning that a particular fragrance is popular enough that a wearer might inadvertently smell the same as someone else, again does not communicate olfactive or sensory information. The description does not communicate specific information about the olfactive nature of the scent: rather, it is warning the reader that the fragrance is so popular and ubiquitous that if they wear it, they might smell the same as a (potential) partner's family member or ex-girlfriend. Again, examples like this which do not use the people in the description to communicate actual sensory information were removed from the dataset.

Another frequent use of the words in Table 7.1 which do not strictly employ character-related description is the use of kinship words to metaphorically describe a perceived familial relation between different fragrances, in a similar way to the examples including *DNA* in Chapter 4:

(159) Sauvage EDT's calm, more mature, caring half-**brother**.

(160) Smells like a fainter, weaker, less projecting baby **sister** of Mancera Holidays

[1] A fragrance by Tom Ford.

Examples like these were also removed from the dataset— while they do communicate olfactive information, they do so through a simple comparison to another fragrance, where the comparison is made using figurative language. The idea of a person or character is not being used to communicate the information, but rather the familial kinship term is being used figuratively to denote a perceived familial relationship between one fragrance and another.

Once these examples were removed from the dataset, 121 examples remained. There is a significant gender bias in these examples: of the 121, only 24 refer to male or masculine people in their description, while the remaining 97 examples contain feminine words. This does not reflect any similar bias in the corpus as a whole: overall, the tags for PEOPLE: MALE and PEOPLE: FEMALE occur with a similar frequency—355 instances for PEOPLE: FEMALE and 385 for PEOPLE: MALE.

7.1.2 Searching for pronouns

While the methodology described so far has generated a robust dataset which contains a broad range of carefully curated examples, it is possible to augment it with an additional search technique. Many of the examples collected through the semantic search technique contain the pronouns *he*, *him*, *she*, *her* and *who*. By searching the corpus for these pronouns, it may be possible to find further instances of this kind of character-based description which were not found by the semantic searching method. (Searching for *they* does not yield useful results: *they* occurs 3 times in the set of character-based examples, and does not refer to a person in any of those examples.) Because the language of the corpus necessarily describes perfume (which is generally an *it*, but sometimes personified as a *she*), instances of *he* or *she* typically refer to a person with some relationship to the description or evaluation of the fragrance. Often this is a real person with some relationship to the reviewer:

(161) This is my partners #1. **He** is obsessed.

(162) I ran into a friend and **she** said ""you smell amazing, what perfume is that?""

The pronouns have a high frequency in the corpus, such that manual sifting of the kind employed with the earlier semantic searching is not feasible. Instead, a random sample of 100 examples for each pronoun (*he*, *him*, *she*, *her* and *who*) was drawn. These samples were then manually checked, and only the pronouns whose sample data contained character-based

olfactive description were searched for in the whole corpus. In this way, it was possible to establish which pronouns were likely to yield useful results in a larger, more thorough search. In these samples, only samples containing *she* displayed evidence to suggest that searching that words in the corpus as a whole would prove fruitful, likely reflecting the feminine bias in the language of the corpus discussed above. In the sample data, *he*, *him* and *her* referred exclusively to people in the reviewer's life:

(163) I asked my partner what **he** thought of it (**he** is utterly not into scents), and **he** said, 'Masculine and woody.' For **him**, that's a whole essay on perfume. This perfume got **him** to speak actual adjectives. Impressive.

(164) I sprayed some on my shirt one evening and my girlfriend hung it up on **her** closet door

Who is generally used in contexts like examples 165 and 166, to refer to a suggested person who may like the perfume:

(165) Perfect for people **who** live in tropical countries

(166) This is just delicious for me as a woman **who** doesnt like florals

She is most frequently used in the sample data to refer to a woman in the life of the reviewer, but five of its instances in the sample set of 100 examples were in the context of character-based description. One of these instances had not been found by the semantically based search methodology described above. In light of this, all 349 instances of *she* in the corpus were manually inspected to find further examples of character-based description. In total, 23 such examples were found. Of those, 14 had been found already by the semantic search method, and 9 were new examples. Those 9 were added to the examples found through semantic searching, to give a total of 106 unique pieces of character-based description which use feminine descriptors, and a final total of 130 examples of character-based description when examples including masculine terms are included.

While using these two search techniques does not necessarily find every example of character-based language used to communicate olfactory information, it allows us to cast a sufficiently wide net to collect a sufficiently broad set of examples on which to base a robust analysis.

7.1.3 Searching for place

In searching for places, a similar search technique was employed. The corpus was searched for words within the five semantic domains within the USAS tagset structure which could carry meaning about places or locations. Namely these are ARCHITECTURE, KINDS OF HOUSES & BUILDINGS, PLACES, MOVEMENT AND TRANSPORTATION, GEOGRAPHICAL TERMS, and GEOGRAPHICAL NAMES.

Many search terms did not yield any examples, and often those which did were often not used with relation to the place: for example, in its sole descriptive instance *Manhattan* is used to compare the scent of a fragrance to the cocktail, not the borough of New York City:

(167) It opens with a sweet tobacco and **Manhattan** drink-like nature

The single use of *Casablanca* (not counting references to the fragrance named *Casablanca* produced by Swiss Arabian) refers to the film rather than the city:

(168) Now this is a scent I could imagine Humphrey Bogart would have worn in that movie **Casablanca**. It has a charming enigmatic old world sophistication vibe.

Like the character-related examples above, many examples containing references to particular places do not use those places in a descriptive context, but rather to describe places which have some relevance to the life of the reviewer, often a context in which they purchased or experienced the fragrance under review, or a context in which they would ideally wear it:

(169) I can see it perfect for going to the **beach** when it's hot out and you have large sunglasses and a large sun hat

Other examples make reference to locations which are tagged within the searched-for categories, but which are used to modify another descriptive term rather than as a descriptive strategy in their own right:

(170) For me its a scent of chimney smoke in a winter day, crisp air and some **forest** green

(171) Very **church** incense, in the best possible way!

These examples were all removed from the set of search results, resulting in a set of 68 examples which use setting and place to communicate olfactive information.

7.1.4 The narrative dataset

Overall, the methodology outlined above generated a dataset of concordance examples consisting solely of reviews which employ narrative-based descriptions centred around setting and character to communicate olfactive information. There are a total of 198 unique examples collected using the above methodology: 106 examples which describe feminine characters, 24 which describe masculine characters, and 68 which describe locations and places. Some of these examples fit comfortably into more than one of those categorisations: example 172 is a very simple example of this, in that it describes the fragrance both in terms of an imagined person (the femme fatale) and an imagined location (the jazz club), which combine into an overall narrative-based image which describes the olfactive experience as a whole. Examples such as this have been assigned a category for the purposes of this chapter according to their primary descriptor— in the case of example 172, the femme fatale.

(172) Totally **femme fatale** in a **jazz club**-vibes for me

There are likely to be more examples of narrative-based description in the corpus which have not been found by this methodology. More examples could have been found by, for example, using a list of occupations as search terms in order to find descriptions which rely on characterised people who have those occupations. A search using a preliminary set of 71 terms taken from an Encyclopedia Britannica vocabulary list of occupations (Britannica Dictionaries, 2024) returned only one result, describing a professor:

(173) What I get is more of a mature, sophisticated, dry, masculine fragrance that would befit a scruffy **professor** in his late 40s who comes to class in his old leather jacket.

While this is a clear example of character-based description, it was not added to the dataset for reasons of methodological consistency.

More examples of jobs and professions used to describe a fragrance undoubtedly exist in the corpus (e.g. the *farrier* example in Section 7.5.1). Finding all of these examples however is neither feasible nor necessary— while the searches outlined above cannot find every single

instance of a person or place in the text, they do cover a sufficiently wide range of examples to generate a representative dataset of a sufficient size to facilitate a robust analysis. That the pronoun searches outlined in Section 7.1.2 found only a small handful of examples which had not been found by the semantic searches suggests that those searches found the vast majority of person-based description in the corpus.

By using methodology outlined above, it was possible to create a small dataset of concordance examples which consists entirely of reviews containing some degree of narrative-based description. The following sections will analyse this corpus in a less systematic way compared to the comprehensive corpus-driven analysis in Chapters 4, 5 and 6, focusing less on data-driven analysis and more on close analysis of selected examples. The examples are chosen as representative instances of certain semantic patterns apparent in the dataset, which will be explicated in the relevant sections below.

An important point about the nature of Fragrantica as a data source which was raised in Chapter 3 has some degree of relevance in this chapter: the motivations of the reviewers who write on the site are not only to accurately describe and evaluate the fragrances about which they are writing. Reviewers can also be motivated by the desire to write interesting, amusing or creative prose. This motivation is especially apparent in many of the examples analysed in this chapter, which rely on evocatively imagined and often humourously written description which may prioritise these elements over being effective pieces of sensory communication. It is however nonetheless worthwhile to comprehensively analyse these examples, because they do tell us about how olfactive communication works: even if the aim of the review is to be humourous more than accurately communicate olfactive information, it must still exploit the same semantic pathways for the communication of olfactive meaning, otherwise the reviewer's joke will fall flat.

Although the analysis in the following pages is less comprehensive than that in the previous chapters, the robust methodology outlined above was still necessary to collect the examples to be analysed. Collecting the examples in this way ensures a broadly representative dataset from which semantic patterns can be established, where a more cursory collection of examples could result in the omission of important examples and the missing of important patterns of language and meaning. A thorough search means that even though the analysis in the following pages is driven more by close textual analysis of selected examples than corpus methods, the patterns established will still be firmly grounded in the language of the corpus

in a broad sense.

7.2 Characterisation and people

One of the most frequent ways in which the reviewers represented in the corpus use narrative-adjacent elements (i.e. elements which contain aspects of narrative techniques like the establishment of character and setting, without necessarily offering a fully-fledged narrative description) to communicate sensory experience is to describe a fragrance in terms of an imaginary or fictionalised person. The level of detail in the description of this person can vary greatly, from a reference to a barely-defined 'type' of a person (e.g. a generic *old lady* in example 174) to a lengthy and detailed sketch of a clearly imagined character (example 176). These descriptions can also reference real people known to the reviewer, like the childhood neighbour in example 175, and with whom the reviewer has a certain olfactive association or memory.

(174) My first impression was like I was smelling and old lady

(175) My sister and old bff from childhood would laugh at what I'm bout to say, but it's true... This smells like ""Jone!"". She's our nosy old lady neighbor that lived right in between our two houses that we grew up in

(176) It took me some time to understand L'Ange Noir, I'd go to wear her, but our personalities would clash.... I'd feel uncomfortable, riled up, disturbed... I kept thinking she was something she wasn't. I thought, Iris, almond, amber, ambrette, tonka bean....comforting right? No... if I'm looking for the sweet embrace of comforting warm whispers and everything's gonna be ok type fragrance, and I go looking for this bitch, I'm looking in the wrong place. L'Ange Noir is none of those things.... It's weird because I never found this to be particularly sexy... but the way I feel when I put her on... I realize this is my "I'm not looking to be saved...." femme fatale fragrance. She's cattyeyelashes and shimmery shadows, dark berry koolaid lip plumping glossy, in a Dracula cape, on top of a silk lace slip, and motorcycle boots. She's burnt rubber and black coffee, and sour dough bread, and a jar of almond butter that's separated oil, and you gotta mix her up, so she lives upsidedown. She's candle wax poured on your skin... She eventually simmers down.... Tho even after she's left and you were hoping she'd stay, her ghost remains, on your pillow, on your tshirt, the strands of

> hair she left in your bed, and you still smell her, everywhere, singed into your nostrils, the remnants of her dry down, smokey vanilla almond musk and that playdohesque powder.

In the corpus, most of the character-based descriptions prominently feature at least one of a handful of key characteristics. The first is age: olfactive associations with elderly people are very frequent, but those which mention youth are much rarer. The second characteristic is gender, which as discussed in Section 7.1 reflects a strong bias in the corpus towards the feminine. The third is perceived social class and wealth, which is used to describe fragrances through associations with aspirational or so-called 'classy' lifestyles. The final characteristic is perceived sexual attraction, which has clear semantic and cultural links to the characteristic of gender and also to the way in which fragrances are marketed and advertised.

A prominent pattern with these characteristics, which can also be seen in the examples to do with setting and place explored in Section 7.3, is that many of the descriptions describe people who have some prominent aspirational trait. This is usually in either a wealth/lifestyle or a sexual sense— a key characteristic of the people described is typically that they are either wealthy or sexually attractive (or sometimes both). The following pages will explore in detail how the reviewers represented in the corpus generate these pieces of imagery to describe olfactive experience, first considering examples which foreground age and gender, then class, lifestyle and wealth, then sexual attraction.

7.2.1 Age and gender

As mentioned in Section 7.1, there is a significant gender bias in the data in that descriptions to do with women outnumber those to do with men four to one. In many of the examples, the gender of the person used as a piece of description is fairly incidental, and marks whether a fragrance is perceived as a masculine or feminine scent—fragrances are typically allocated into and marketed within a binary of 'for men' and 'for women'. The Fragrantica site itself allows users to determine how masculine or feminine they perceive a fragrance to be, and this is reflected in quite a straightforward way in the reviews collected from those fragrances: feminine fragrances marketed for women are described through female characters, and those marketed for men are described through male characters.

More interesting is the way that gender combines with age in an olfactory-descriptive context. The vast majority of instances where a person or character is used in a description of an unpleasant scent invoke the image of the *old lady*:

(177) Overall quite feminine and dainty, but easily intrusive due to what I'm assuming is the heavy musk and cashmeran. I cannot stress how sharp and powdery it is, reminding me of an **old lady** at times.

(178) If I spray this and close my eyes I picture an **old lady** sitting on her plastic covered couch, with the heat cranked up to 77 degrees, petting her toy poodle. The scent aint for me.

The concept of the *old lady fragrance* is one which is used very frequently throughout the corpus, and almost always as a criticism. Highlighting this pattern, other examples specifically say that while the perfume smells like a woman of a certain age, it is not an *old lady perfume*, as in examples 179 and 180. This is a similar phenomenon to that which was apparent in Chapter 5, where fragrances are often reassuringly described as *not too sweet*, or in Chapter 6 where certain components of some fragrances are *not too loud*— the reviewer is noting the absence of a potentially unpleasant quality that might be associated with a certain descriptor.

(179) could picture my beautiful, classy grandmother wearing this in the 60s, perhaps while wearing a pink tweed suit. That's not to say it smells like an **old lady** but very much a lady of a different era.

(180) it's a bit grandmother-ly, but not that **old lady** smell that Chanel 5 has . I'd say it's more mature, I'm not sure I'd see this on a teenager or a 20 year old girl.

What characterises the *old lady perfume*? In an article for the fashion magazine Harper's Bazaar defending this type of fragrance, the fashion journalist Jane Daly describes the fragrance as one which could be perceived as 'too powdery, too strong, too *much*' (Daly, 2022). Using the classic example of the 'old lady fragrance', Chanel's *No. 5*, Daly notes that perfumes given this label are generally launched during the period between 1920 and 1980, and typically share common synthetic aldehyde ingredients which give the fragrances a 'powdery soapiness' in their olfactive profile. Daly also notes that during the original releases of fragrances which are now labelled 'old lady' fragrances, their popularity led to the pervasive 'copycat' scenting of household products like candles, detergents and air fresheners. This means that the scent profile is particularly associated with a particular generation, even more so than if the scents had remained personal spray-on fragrances. Because of this strong association with a previous generation, many of whom have now become *old ladies* who still

wear the such types of perfume, the *old lady fragrance* becomes useful shorthand for a fragrance with this particular profile which to modern noses is unfashionable and old-fashioned.

As well as sociocultural assumptions about the types of fragrance which are preferred by or associated with elderly women, the frequency of the elderly in character-based descriptions can also be partly explained by the fact that elderly people do produce a distinct body odour compared to people in younger age groups. In an experimental study by Mitro et al. (2012), participants were able to reliably identify body odour produced by 'old-age' individuals (those aged between 75 and 90), but not that produced by other age groups. This phenomenon means that the elderly form a group which are uniquely placed in that there is an actual, distinctive olfactory component associated them which can be drawn upon, in contrast with other socio-cultural groups whose use in olfactive description is much more rooted in associative meaning.

This age-related description is much more frequently used in a feminine context than in a masculine one. Old men are not as well represented in the corpus as old ladies are, and when we do come across them the description is not as explicitly negative as it typically is with *old lady*. In example 181, we see the only description of an explicitly older man in the narrative dataset:

(181) Opens up beautifully with lots of depth - I was really drawn in. Woody, citrusy, green, that bit of lavender, a touch of spice. I was disappointed in the dry down, since it really dries into an overly mature powdery/light woody scent. I'm all for mature scents, and this one does have elegance, but the elegance is more like that of a well-dressed 65+ year **old man** who has some wisdom to share.

This description is critical of the fragrance, and uses the character of the man in a critical fashion: the smell is *overly mature*, and the image of the well-dressed man is used to illustrate the precise way in which the fragrance is 'elegant' in perhaps an undesirable way: the elegance is conditionally the type of elegance held by an older man, and is *too* old and 'mature' a kind of elegance to be enjoyed by the reviewer. While similar in a way to the descriptions involving the image of the *old lady* given above, example 181 is less immediately dismissive than the shorthand of the *old lady*.

7.2.2 Class and lifestyle

Many of the examples which use descriptions of people to communicate olfactive information describe people who have wealthy, or at least in some way aspirational, lifestyles. In some examples this is explicitly stated, like in example 182 which directly references a 'rich man'. In others, like example 183, the person described is not inherently described as wealthy per se, but has a desirable and 'together' lifestyle.

(182) makes me feel like a 50-year-old rich man in moccasins, white shorts and polo shirt with a sweater hanging around my neck strolling around a marina. Not something I would choose to identify with.

(183) It makes me feel like the kind of woman who always sleeps in crisp white sheets and has ice water with every meal.

Of the examples which include a person explicitly describes as rich or wealthy, this is not always within the context of a positive evaluation of the fragrance. Comparing the two examples below, example 184 describes a very desirable situation, and this is reflected in the reviewer's overall positive evaluation of the fragrance. But in example 185, which also uses a *rich woman* as a source of description, the evaluation is not as clearly positive: while the wealthy lifestyle and the owning of a house in the desirable Hamptons is an aspirational situation, the reviewer here uses the inaccessibility of that situation to distance themselves from the fragrance. The fragrance smells like a type of person with whom the reviewer does not identify, and this disparity is used to highlight the fact that the fragrance is not suited to their taste.

(184) First of all, if you're thinking of getting it, and you like sweet creamy tropical-coconut fragrances (but with class): GET IT! I saw people were saying that it smelled like a **rich woman** on an all-inclusive resort in the Bahamas. With a large sun hat, designer sunglasses and a fancy long beach cover-up laying in a cabana by the pool. Handsome man bringing her cocktails. This is so accurate.

(185) This smells way to mature for me personally and very bubble gummy. This reminds me of a **rich woman** with a house in the Hamptons or old money Park Avenue that loves to entertain her guests.

The converse of this pattern is that often when a reviewer is describing a fragrance negatively by invoking the imagery of a person, this person is poor, as in example 186. (This pattern is not the case for examples which talk negatively about a fragrance because of its *old lady* associations, discussed above— many of the old ladies in those cases are suggested to be wealthy, but, like the older man in example 181, the reviewer is using the example of an older person to distance themselves from a fragrance which is not to their personal taste.)

(186) smells like a very musky sweaty homeless guy with stale whisky breathe who hasn't bathed in a month

In this example, which is the only explicitly negative piece of description in the narrative dataset which involves a man, the character described is at the opposite end of the socioeconomic spectrum from the people we have seen so far. The person in example 186 leads a lifestyle which is clearly not desirable to the average reader. The imagery here of the unpleasant lifestyle which the reader would not like to live reflects and strengthens the reviewer's point that the fragrance is also undesirable, and does so in a way which makes the specific nature of the unpleasant smell immediately accessible through the activation of a specific character-based schema. Even if we have not met a specific person exactly like the man described in example 186, we have likely encountered someone similar (the unpleasant-smelling person sat next to us on the bus, or in front of us in the queue), or seen the archetype in media and seen characters' on-screen reactions to an unpleasant odour.

The second thing that is accomplished by the level of detail in this particular description is the generation of humour. A potential goal of public online communication like these reviews is to write something which other users will appreciate as being funny. By being as specific as possible with the terms used to describe the scenario (a *homeless guy* not a *man*; *stale whiskey breath* not *bad breath*; an overall quite detailed description rather than *smells like a malodorous man*), the user is fulfilling this goal rather than attempting to communicate the nature of an olfactive experience in the most accurate way.

It is important to bear in mind therefore that the communication and evaluation of an olfactive experience is, as discussed in Chapter 3, not the only communicative goal for the all the text in the corpus: some reviewers also have the aim of simply writing amusing prose, and this is reflected in some of the character-based descriptions they write.

7.2.3 Sexual attraction

Fragrance advertising often leans heavily into sex as a marketing strategy (Reichert et al., 2012), and this is reflected in many of the character-based examples collected in the narrative dataset. Many of the fictional(ised) people which reviewers use to describe fragrances are described in a way that highlights and relies upon their perceived sexual attractiveness. This does not have a significant gender bias in the examples in the dataset: around 20% of examples in both the masculine and feminine categories are based on sexual attraction in some way. In some examples, this sexual element is introduced to the example by describing the imagined person in a particular way, as in example 187:

(187) This makes me think of a MILFy[2] mom, breathing in the cold, sweet winter air as she leaves her cabin in her fitted Faherty puffer jacket to ski down the tree-lined slopes before reading with hot chocolate on the cabin porch.

This example, which both highlights the imagined woman's sexual attractiveness and her age by describing her as a MILF, also has strong links to the kind of aspirational lifestyle discussed in section 7.2.2: the woman is on a skiing holiday, and is wearing an expensively branded jacket (Faherty jackets retail for approximately $400). The sexual attraction element of this description is somewhat more secondary to the description than this lifestyle element, but the use of 'MILFy' as a descriptor makes the example one for which the concept of sexual attraction is important. The relatively minor inclusion of the sexual attraction element in this example stands in contrast to example 188, which describes the fragrance almost entirely in sexual terms:

(188) Yes, it's the ultimate Netflix & Chill scent. But that's where this frag is quite peculiar. I don't really want to smell like this all the time. It is feminine in its own way. But as another reviewer put it, it's a musky, alluring, heated feminine. It smells like a girl that wants to have sex. A horny smelling scent.

Example 188 uses a high degree of sexual imagery in its description of the fragrance, especially in the part of the description which uses a person as the descriptor. This sexual atmosphere is immediately established with the description of the 'Netflix & Chill scent'—

[2] *Acronym meaning Mother I'd Like to Fuck.*

a euphemism for sexual activity— and continues through the descriptive language of the example. That the woman used to describe the perception of the olfactive experience of the fragrance has only one characteristic, that she wants to have sex, highlights this nature of the description as a whole: this fragrance is all about sex and attraction.

Three examples in the narrative dataset introduce the concept of sexual attraction through the introduction into the description of real-life people:

(189) This is the olfactory equivalent of Bette Davis's character Julie in the cult-classic Jezebel, particularly when she makes her entrance at the Olympus Ball in that red 'french cancan' gown. A streak of buxom blood-red in a sea of virginal white dainties. I can only wish I was Henry Fonda, meh, who ditches a ravishing hot-blooded Southern belle for a prim and proper Yankee (this is only in jest, I love all of ya'll equally). This is the scent of 'Jezebel', a nobility that has been purposefully stained by a kind of wanton desire, a need, a want.

(190) imagine it on Eva Greene and suddenly it is the sexy femme fatale - the woman who's going to take you on an adventure, albeit a dangerous one.

(191) This is just a grand slam for my DNA. This smells like a classic man. Its the sterling silver of scents. Very masculine but extremely refined. Do an image search of 1950s Marlon Brando. That's how this smells. Rugged but refined. Dangerous but composed. A gentleman in the streets but a BEAST in the sheets. This is driving a black muscle car in a black suit & tie.

In example 191 (which is a full, complete review) the reviewer makes reference to a real-life figure, Marlon Brando. By invoking the image of Brando, a 1950s sex symbol, the reviewer here centres their olfactive description around the iconography of conventional, charismatic masculinity. This is a focus which is consciously foregrounded in the second line of the review, where dichotomy of masculinity and sophistication is explicitly stated.

Example 191 is deeply rooted in attraction and sex appeal. The olfactive description in relation to Brando is constructed with parallel and contrasting zero-copula pairs of adjectives. In the second line of the review, the general pattern of these pairs is established: one term to do with rebellious, 'bad-boy' masculinity (*rugged*) followed by a term to do with social sophistication (*refined*). These combine to create an image of a wild and rugged masculinity that is still sophisticated and controlled. This pattern builds up to the all-capitalised BEAST— a forceful, monosyllabic word which contrasts strongly with the polysyllabic, softer 'gentleman', allowing the pattern of parallel adjectives to climax in a descriptive pair most clearly related

to sexuality. This transparently sexual tone is especially apparent given that the words are in the syntactic context of the common idiomatic structure 'X in the streets, Y in the sheets', which amplifies and explicitly foregrounds the sexual nature of the description as a whole.

Again, this description has significant links to the way in which fragrances are marketed as consumer products, using traditionally masculine iconography and sex appeal in advertising. Fragrance marketing often relies on sex appeal to advertise the product to consumers, often giving rise to concerns about the objectification of women in such advertising (Amy-Chinn, 2001). The use of sex appeal in fragrance advertising has been studied in depth particularly by Thomas Reichert (Reichert et al., 2011, 2012)— in his 2012 study, approximately a third of print magazine advertisements for fragrance included some kind of sexual imagery. Because of the pervasiveness of this kind of marketing, and the idea that a fragrance is something that a consumer may buy in order to be perceived as more attractive themselves (Reichert et al., 2011), it is perhaps not surprising that reviews of that product will also contain some degree of sexual meaning.

In these examples of character-based description, we see reviewers invoking a wide range of people and characteristics in order to communicate olfactive information. While associative meaning is perhaps the most important communicative strategy employed here, what is crucial is that the associations drawn upon are not necessarily olfactory. By invoking the image of Marlon Brando, the reviewer is not saying that the fragrance smells like Marlon Brando smells. Rather, the associations we have with Brando— his charisma and status as an icon of 1950's desirability— exploit the dense network of perceptual meaning and communicate effectively how the reviewer *feels* about the fragrance. This allows the reader to make the same associations, and imagine in their mind's nose a fragrance with which they may have these same associations, and understand the olfactive component of the sensory experience being described.

7.3 Setting and place

Like the character-based examples discussed above, many of the olfactive descriptions in the corpus which use place- and setting-related description are to do with aspiration and desirability. Most locations described are desirable in some way. It is important to bear in mind when considering the following examples that the majority of the user base of

Fragrantica is based in the United States, so descriptions of e.g. Italy and Europe are significantly more aspirational and exotic to those reviewers than they would be for a reviewer from the UK, from where European travel is much more affordable and accessible.

7.3.1 Desirable locations

Like the examples explored in section 7.2.2 on class- and wealth-based descriptions, many of the examples to do with place and setting also describe desirable destinations which, to an American, would be a luxurious holiday option.

Few countries are mentioned by name at all in the context of olfactive description, but Italy is by far the most frequent. Examples 192 to 195 are the four instances in the narrative dataset where Italy is employed as a setting which is used to communicate olfactive information.

(192) Gives me vibes of chilling in **Italy**, sunny awesome weather, on a nice polished boat in a large body of water

(193) it transports you to **Italy**; waking up early to the dewy air, walking to the local bakery making fresh citrus juices

(194) the scent feels like a nice breezy summer day somewhere in northern **Italy**

(195) a sophisticated, elegant, feminine leather jacket. Makes me feel like I'm riding a vespa in **Italy**

In these examples, the reviewers in each are relying on activating a broad schema of the 'Italian holiday'. There are few specific explicitly olfactive referents within these descriptions, except perhaps the citrus and the bakery in example 193, but these are arguably given as pleasant and leisurely holiday activities ('*walking* to the bakery', '*making* fresh citrus juices') rather than as olfactive embellishments of the description.

Key to these examples is that they, like the lifestyle-associated descriptions involving people in Section 7.2.2, rely on invoking the imagery of desirable lifestyle experiences to communicate sensory information associated with those experiences.

Other examples rely on less specific locations, but specify more clearly the situation that might happen there:

(196) This fragrance transports you to an island with your feet at the edge of the waves breaking on land.

(197) perfectly encompasses the vibe of wearing an all-linen outfit standing by the ocean waiting to aboard a boat

All these examples, including the Italian ones, share a common thread: in all the described situations (except for perhaps the Vespa situation in example 195, which could be perceived as more fast-paced, but this is arguable) the reviewer imagines a relaxing and peaceful situation. Rather than communicating specific olfactory information, this descriptive strategy is more about communicating an evaluation of the fragrance: the reviewers are evaluating the fragrance positively, and describing a pleasant situation in order to communicate that: *this fragrance is nice and enjoyable, in the way that this situation is nice and enjoyable*.

7.3.2 Olfactive associations

Another common way in which reviewers use setting and place to communicate olfactive information is to invoke the imagery of a place which has particular olfactive associations which we know about through experiential interactions. In the examples here, unlike those discussed above, the descriptors are ones which do have concrete, if incidental, olfactive components. That is to say that the settings and places used as points of description in the examples in this section have some scent-related aspect which is not central to their use, but which has a commonality between different instances of that location. The log cabins in examples 198-200, for example, must smell inherently *woody* in some sense— even if we have not been inside a log cabin, it is easy to imagine how one might smell based on our knowledge of the smell of logs and wood. That is to say that even if we do not have a fully formed, experientially-grounded schema of the *log cabin*, one can be constructed based on previous experience and assumed knowledge.

This stands in contrast to the examples of desirable locations explored in the previous section, which do not generally have an inherent, distinctive olfactive component and rely entirely on connotation and associative meaning, and often communicate evaluative rather than specifically sensory meaning.

In many of the examples in the narrative dataset, the location is a countryside one. This is usually around the words of either a *cabin* (as in examples 198-200) or a *cottage* (examples 201-203):

(198) light woody fragrance that almost reminds me of being inside of a newly built rich wooden **cabin**

(199) Makes me think about sharpening an axe next to a log **cabin** in the woods after having a hot bath

(200) It smells like a country side **cabin** or a rock stars girlfriend

(201) I get the impression of a tall, dark, strong and powerful tree standing in the distance if our delicate summer **cottage** surrounded by wet grass and tiny wild violets.

(202) its the embodiment of tudor **cottage** nestled in springtime blooms and willow trees that wry in a pattern that is almost distinguishable, but just unique enough where you want to constantly think about it.

(203) It almost feels like a warm comfy sweater on a cold day as you breath in the cold damp air in the woods behind your stone and wooden **cottage** with burning logs in the fireplace lifting smoke out of the chimney at the same time you can smell the damp autumn leaves under your boots as you walk by spruce trees squishing it's needles and tiny conifers in your leather gloved hands

Unlike the examples discussed in Section 7.3.1, which focused more on the general impressions of a desirable location, these examples more often mention specific olfactive referents in order to ground the imagined situation in a more concrete olfactive referent. The *cabin* examples situate the cabins in the woods (we saw many woods- and forest-based examples in Chapter 5, in the discussion of plant-based descriptors), of which most of us have some degree of direct sensory experience even if we have not been in log cabins. The *cottage* examples also situate their cottages alongside directly olfactive sources of description (again mostly plant-based: *springtime blooms*, *conifers*, as well as *smoke*). These additional descriptors allow the writer of these descriptions to hone the imagery generated by their initial settings: the reader's own schemata fill in the sensory gaps in the generated *countryside cottage* image, but by specifically mentioning other sensory aspects like the flowers and the smoke the reviewer is able to more precisely generate a scenario of a place which is more closely representative of the olfactive experience they are trying to describe.

One of the most common associative descriptions to do with place that can be seen throughout the narrative dataset are those which describe a fragrance based on a religious

building. Cathedrals are the most frequent of these (see examples 204-209) but the dataset also includes churches, temples, and a chapel. There is a strong Christian bias in these examples (probably because of the mostly American user base of the Fragrantica site)— only the two temples in examples 211 and 212 are non-Christian religious places.

(204) Smells like an old **cathedral** with a hint of spice

(205) One of the most interesting wintery fragrances which is both warm hug after a walk in the cold and also a dark mysterious and dusky **cathedral**

(206) This is what a sinister, dark, gothic **Cathedral** smells like

(207) For me, it is quite elusive, watery, slightly medicinal, with a slight vagueness of walking out of the shadows into a dim-lit **cathedral**.

(208) Intense sweet myrrh burning on a plate of smoky charcoal. It really does resemble a **cathedral** and it has a chilling medieval austerity and a commanding presence

(209) love the feel of this one it's like stepping into a time machine and going back to some ancient medieval **cathedral** or crypt shrouded in darkness. Sacred and solemn I can almost imagine monks ceremoniously chanting and bells chiming when I smell this

These examples, which are all 6 instances of cathedral-based description in the narrative dataset, show several common threads in the way they employ the imagery of the cathedral to generate olfactive description. They are of course linked by the olfactory associations we have with cathedrals, like the smell of incense which is used for religious purposes inside the buildings. But the reviewers who wrote these descriptions are not simply referring to the olfactive components of the mental schema of the cathedral— by mentioning the cathedral in the description, the entire schema of the cathedral is invoked as the sentence is parsed and understood. The language in the rest of the description then serves to highlight certain aspects of this schema. There are two main facets of the cathedral which are highlighted in this way: In examples 204, 208 and 209, the age of the cathedral is the most significant part of the schema. In examples 205, 206 and 207, the reviewers choose to highlight the dimness, darkness, and lack of light in the cathedral.

This links to the examples discussed in Chapter 4, to do with light and darkness and their associative meanings— by highlighting the darkness of the imaginary cathedral, the reviewer is highlighting how this particular facet of the experience of being in that location makes

them feel. This feeling is then applied associatively to describe the olfactive experience of smelling the perfume. The feeling is further highlighted and heightened by evocative sensory description of the feeling of being in the cathedral: this is especially apparent in example 205, which foregrounds the temperature through the parallel juxtaposition of a 'warm hug' and a 'walk in the cold'.

A semantically similar schema is established by the other religious settings which are used as olfactive description, a church, a chapel and two temples:

(210) expansive and spacious, like vaulted ceilings, and stained glass windows.... The incense continues to build in intensity, as it glides through an ancient **church**, onto the terrace, making its way thru into an underground metro, into shadowy gothic streets.... The incense in here is DIVINE!

(211) Slightly mystical and witchy, but in a super subtle way —kinda smells like an ancient **temple** in my imagination.

(212) It smells as though I have traveled to a beautiful secluded ancient **temple** atop a mountain in the middle of the rainforest. I walk into this **temple** and instantly am surrounded by the sirwling [sic] scents of spices, vanilla, and resins being burned in tribute to the divine. Fruits, honey, and desserts are laid out on beautiful silken tapestries as offerings.

(213) My husband said I smell like an Etruscan tomb, or maybe one of those ancient abandoned road-side **chapels** in southern France, and tbh, he's not wrong

In these examples, the ideas of age and mystery, central to the schema of the ancient temple, as well as to the cathedral, are highlighted by the language used to describe them. The church in example 210 is described using very similar language to the cathedrals in examples 206, 208 and 209. Again we see a focus on darkness and mystery, and a highlighting of the unknown. These terms modify what our natural schemata of places of worship might be— by highlighting the mystery, darkness and age of these buildings, the reviewer is able to control the precise associative and olfactive images generated. Our immediately accessed schema of a cathedral, for example, may not have these aspects immediately apparent. But by explicitly highlighting that the fragrance smells like *this type* of cathedral—a dark and mysterious one—the reviewer is able to more precisely draw on the intended associated olfactive meaning.

7.3.3 Negative language and unpleasant connotations

Places and settings are also used to describe unpleasant olfactive experiences, with greater frequency than people and characters are.

Section 7.3.1 described examples which made reference to Italy, all of which were positive descriptions hinging on the desirability of Italy as a holiday destination. The other two countries mentioned by name in the narrative dataset, France and Poland[3], both occur within example 214 below:

(214) This is such a cool unique scent. I liked it on other people so I bought a 3.4[4] a few years ago but I used maybe 5 sprays since I got it. Probably will fill up a travel size and trade the rest or sell it for something else. this smells like sitting in the back of a pickup truck in poland (or maybe rural northern france) during a brutal winter as you are driven through the desolate countryside at night. everyone in the truck is smoking and drunk on whiskey. this is the most european scent possible. totally unsuitable anywhere south of the equator and therefore unwearable for me. needs a real winter to be worn properly.

In example 214, we see the tension between two goals of the reviewer: first, to communicate an olfactive experience and their evaluation of it, and second, to construct a funny piece of prose. While many of the elements of the description (*brutal winter*, *desolate countryside*) carry a negative prosody, and are associated with unpleasant experiences and odours, the review as a whole is not strictly unfavourable: the reviewer simply deems the fragrance to be unsuitable for the climate in their location. The fragrance is *cool* and *unique*, the reviewer *liked it on other people*, yet the description of the actual sensory experience of the fragrance is marked by negatively weighted language. By leaning into the unpleasantness of the situation described, the reviewer is able to maintain a humorous tone and create a joke: the most European activity is to drink, smoke and drive a pickup truck through cold, empty countryside.

Some examples which describe genuinely unpleasant (to the reviewer) fragrances use locations associated with bodily waste, be they legitimate like a toilet (example 215) or circumstantial like an alley which has been urinated in (example 216):

[3]Other countries are mentioned by name in the corpus as a whole, but they are not used to generate descriptions of olfactive experience.

[4]3.4 fluid ounces, i.e. a 100ml bottle.

(215) smelled like a public restroom at the zoo : and the zoo animals were using it themselves

(216) The opening is of a pissy back alley behind the cinema, to be honest.

These are both clearly unpleasant examples, and both examples which rely on the generation of humour to highlight the unpleasantness of the olfactory experience. We see a similar humorous tone employed in example 217:

(217) smells like a hotel room that allows smoking but tries its best to mask the smoke smell for the next guests

In this example, the unpleasant aspect of the olfactive experience is described as being a kind of subtle undertone, more than the immediately apparent unpleasant scents in the previous example. Again using humour, example 218 takes a different approach to using a setting or location to provide a negative evaluation of an olfactive experience:

(218) This is the smell of a bathroom that inexplicably also contains the washers and dryers for a dappled blush-and-beige house that is always too warm. There is moderately shaggy cream-colored carpet on the floors, and the toilet has a quilted seat cover. The plastic tablecloth in the dining room is inexplicably bright dollar-store-green. The aura that permeates this house is alien, somehow both sterile and stuffy. There is a sense of foreboding creeping through the walls because absolutely nothing in this house resembles anything of the outside world, except a single waxy lily in a small blue plastic cup in the kitchen. The rest of the house is entirely insular, sealed off from the natural world, a world where everything is the same every day, and every room is a little too warm and smells too much of an odd cleaning powder

In this example, the reviewer describes a generally colourless suburban house. The description of the pervasive and offputting *ordinariness* of the house again relies heavily on associative meaning to communicate olfactive information: the reviewer here is criticising the fragrance for being very boring and ordinary, and using an invented setting to communicate that in a humorous way.

7.4 More complex narratives

Some of the pieces of olfactive description in the narrative dataset weave both characterisation and setting together. By combining multiple narrative elements, rather than describing a single character or location as in previous examples, reviewers are able to generate fuller narrative-driven situations which associatively communicate the broad impression of an olfactive experience. These more complex examples, which involve both character and place, are the focus of this section.

(219) Nighttime. A procession of taxis. Amber lights. Car doors slam shut. At the foot of the stoop of Les Bains, they stir, and cluster. Leather jackets, double-breasted suits, ripped jeans, endless necklines, eighteen-, thirty-, sixty-year-olds. Presiding over the stairs, Marilyn selects. Who will she take from the street to create the eclectic tribe inside the wildest Parisian nightclub? Hearts beat. "Come in, yes, you. Enjoy your evening. Not you. It's not gonna happen tonight." You climb the steps, and then descend the arena. Light touches. Mingling of cardamom, black pepper, tobacco, musk, patchouli, amber, clove, geranium, honey.

Example 219 uses a rich variety of detailed imagery to communicate its olfactive information. Much of the imagery relies on shared cultural touchstones and the associative meanings we have with those: the setting of Paris is the kind of desirable and fashionable destination discussed in Section 7.3.1, like the beautiful Italian towns and the peaceful countryside. The key sensory aspect of the scene described in this example is the soft, subdued lighting implied by 'amber lights', which creates an atmosphere of late-night intimacy which contrasts with the bustling movement suggested by the 'stir' of people and the constantly moving 'procession of taxis'. The exclusivity of the club described is suggested by the diverse range of people trying to get into it: all age groups are present in the cluster of people outside the club, before the chosen are allowed to enter. The glamour and exclusivity of the club described again contributes associative meaning to the olfactive description of the perfume.

Examples of this kind also often feature imaginary of fantasy settings, like the lair of a wood elf in example 220, or the witch's cottage in example 222.

(220) To experience Oud Palao[5] is to feel like the brambles and undergrowth of an enchanted forest have come to life, wrapped around one's ankles, and pulled the wearer along the ground into a potentially malevolent wood elf's lair.

(221) it evokes visions of an elusive unicorn wandering quietly through an enchanted forest

(222) I get the impression of a tall, dark, strong and powerful tree standing in the distance if our delicate summer cottage surrounded by wet grass and tiny wild violets. It is quiet and contemplative, a gentle giant soaking up the morning sun, a friend and protector to the kind and clever witch that lives in the cottage.

These imaginary examples are a step even further into the realm of associative meaning. We of course have no experiential knowledge of what the lair of a wood elf smells like, and we have no olfactive frame of reference for the elusive unicorn. Our schemata for these are therefore entirely imaginary, and shaped entirely by fiction, folklore, and media. These descriptions rely entirely on associative meaning. Again these descriptive strategies are ones which exploit the densely networked domain of perception in order to communicate olfactory information— by describing visually a setting which has a certain general sensory 'fingerprint', the reviewer evokes in the mind of the reader what an equivalent olfactive general fingerprint might be. This process relies on the close-knit nature of the perceptual/sensory domain, and again indicate that the links between the sensory modalities are close and numerous.

7.5 Discussion

This section will discuss common patterns which can be seen across the examples discussed above, and explore the linguistic strategies and mechanisms which are common between those descriptions which rely on character and people, and those which rely on setting and place.

There is a particularly interesting pattern shown by the data around the communicative functions of the character- and place-centred descriptions discussed in this chapter, and the communicative functions which they fill. These descriptions fill two primary functions: first, they can be used in conjunction with more conventional olfactive descriptors of the kind analysed in previous chapters to provide a contextual, grounding framework which makes the described olfactive experience easier for the reader to imagine. This phenomenon

[5] A fragrance by Diptyque.

can be accounted for within the context of frame semantics and schema theory, where reviewers exploit chunks of experientially-grounded knowledge in order to provide necessary sensory context for a particular description. Second, some examples do not employ any more conventional olfactive descriptors, and olfactive information is communicated entirely through the associative meanings contained within the image.

7.5.1 Narrative elements as framing devices

One of the two main ways in which narrative elements are used in the language of the corpus is to provide contextual grounding schemata which allow the reader to understand the intended sensory description more clearly. Scholars use schema theory to account for situations where a piece of discourse does not provide all the necessary information for the meaning of the discourse to be fully processed and understood (Emmott & Alexander, 2014, p.757). Because the schemata which we hold cognitively are so experientially grounded, the concept can be applied especially fruitfully to sensory discourses, which are by their nature entirely experiential. Where sensory meaning is not explicitly contained in a text, like in many of the examples analysed in this chapter, it can be communicated through the elaboration of a particular schema and its associated sensory components. When we consider what a schema (or a frame) does in a cognitive sense— supply 'missing' information which is not contained in the text— it is possible to see how this can occur in a specifically sensory context. This can be illustrated with a well-known example in the literature, the RESTAURANT schema. This is the main explanatory example used by Schank & Abelson (1977) in their foundational book on schema theory, where they use it to explicate the idea of the *script*, a temporally-ordered aspect of a schema. The RESTAURANT schema has been used by others (Dancygier & Sweetser, 2014; Sullivan, 2023; Emmott et al., 2023, *inter alia*) to explicate the idea of what schemata are and can do, so it is especially useful to use this example to explain how schemata can be manipulated by the Fragrantica reviewers in a sensory context.

Fundamentally, the RESTAURANT schema contains all the contextual information we understand about how a restaurant works and operates: there are items like menus, cutlery and glasses; people present include chefs, waiters, and fellow diners; and we know that the rough sequence of events may run such that a diner enters the restaurant, is seated, orders food, eats the food, pays the bill, and leaves (Schank & Abelson, 1977) All this contextual information is drawn upon in a piece of discourse where a friend says something as simple as 'We went

out for dinner last night'— even though the friend did not mention that there were waiters, or that they paid for the dinner, we assume these things to be true. Schank & Abelson also say that schemata have what they term different *tracks*, i.e. different variations of the same schema. The RESTAURANT schema is different between a fine dining establishment, where diners may be presented with a tasting menu and be offered wine by a dedicated sommelier, and for a more casual small-plates restaurant, where dishes are presented form the kitchen in a less ordered fashion, and a more casual cafe, where diners may order at a counter instead of being offered table service.

In a sensory context, it is possible to imagine how a Fragrantica reviewer might invoke the RESTAURANT schema to communicate olfactive meaning, and how this meaning (and the evaluative viewpoint of the review in question) might differ depending on the track. A hypothetical reviewer (note that this is not real data from the corpus, but merely illustrative) might critically describe a fragrance by saying it smells *greasy but acidic, like walking into a chip shop cafe*. Nothing specifically olfactory is mentioned in this description, but because of our experiential knowledge of the cafe track of the RESTAURANT schema, the reader is able to supply the relevant olfactory information— the fragrance may have notes of fryer fat and an acidic note akin to malt vinegar. Invoking the restaurant schema allows the reviewer to ground their description in easily accessible, familiar, experientially-based knowledge, than relying on more abstract, less easily communicable terminology for odours more generally, like if they had simply used the adjectives *greasy* and *acidic*. These words are not as immediately accessible in an olfactory sense compared to the clear experiential knowledge of the smell of the cafe.

Using narrative elements in this way—to establish a familiar or accessible setting or person around which a full construal can be formed— makes description of complex sensory information more accessible through grounding it in experiential knowledge which is easily imaginable, and closer to the real-life experiences of the reader than more abstract or technical olfactive descriptors. To illustrate, consider example 223 below, which we also saw in Section 7.1.4:

(223) Literally smells like a dirty, leather handed farrier who's been trimming horse hooves and hammering over a smoking forge all day

In this example, the olfactive experience of the fragrance is not described simply as *smoky*,

or *equine*, or *dirty*. Rather these elements are combined into a single descriptive imaginary referent: the farrier. This admixture of separate olfactive facets (the dirt, the leather, the smoke etc) is made more accessible and relevant by its combination under a single framing device, using a technique of characterisation to conjure the figure of the farrier in the mind's eye (and, importantly, mind's nose) of the reader. While most of us likely do not have direct experiential knowledge of meeting working farriers fresh from the forge, the contextual framing device of the farrier 'character' provides a relatively accessible real-world mechanism by which the disparate odour elements the reviewer wishes to communicate can be united into one conceptual unit. The reviewer evokes a schema of the farrier at work, including the elements they explicitly mention but also, crucially, olfactive elements which are not in the text: the barn in which the horse might live, the straw, the hot metal. These components, part of the broader equine schema evoked, add to the sensory construal which is formed by this review.

This process can also be seen in example 224:

(224) it's as though I'm sitting at the beach and a waiter had just walked past with a pina colada and vanilla cake on a tray

In example 224, again the olfactive experience is not described directly in terms of *pineapple*, *coconut*, *vanilla* or *a beach*, but rather the reviewer evokes the schema of a beachside holiday to communicate this information. They draw on particular parts of this schema— a beachside bar or resort— as a contextual framing device, which like the farrier in example 223 unites the separate olfactive elements under a broader conceptual umbrella, making the olfactive description more accessible by framing it with an accessible real-world experience.

By framing the elements of the olfactive experience within the setting of the beachside bar, the reviewer in example 224 allows us to infer certain aspects of how they perceive the fragrance, in addition to the basic olfactive elements (pineapple, coconut, vanilla etc) present. The piña colada element (comprising coconut, pineapple and rum) and the vanilla cake element are brought into the base context of the description, the beach. This mirrors the perceived structure of the fragrance: a sea salty, beachy, maritime base with sweet, fruity elements layered on top.

The idea of the schema is important in understanding how the sensory construal is built by reviewers who adopt this particular narrative-led description.

7.5.2 Associative description using narrative elements

A less frequent but nonetheless important way in which narrative elements like characterisation and setting are used in the language of the corpus is to create imagery which describes the general impression of a fragrance through associative meaning. These examples are different from those explored in Section 7.5.1 in that rather than using narrative elements as framing devices to ground the olfactive elements of a description in experiential knowledge and thereby make them more accessible, they use those narrative elements to generate imaginary people, places, or things whose associative and connotative meanings are what communicate information about the olfactive experience in question.

(225) This thing pukes and rallies. You think she's done for the night but she goes to the bathroom and comes out screaming WAP[6] with four drinks in her hands.

In this example, no specific olfactive referents are given, and the reviewer relies on the description and imagery of the partying woman to communicate their sensory experience

However, when we look at this piece of description in example 225 within the context of the full review in which it appears, we see that the it does occur alongside some explicitly sensory description:

(226) To me this is a denser, fruity sweet Baccarat Rouge with the saffron dialed back. It's a BEAST and I have choked myself out one too many times because it smells so addicting when you put it on you just wanna keep spraying. Don't. Don't do that. This thing pukes and rallies. You think she's done for the night but she goes to the bathroom and comes out screaming WAP with four drinks in her hands. About two hours in this starts to get stronger as you wear it. Then finally like 8 hours in it starts to calm down and fade and you're eventually left with a still noticeable but softer more Cloud scent with added fruitiness. I think it's amazing as long as you don't go ham with it. Addicting, unisex but leaning feminine to me, fluffy, dense, fruity sweet, beast. Name fits this one[7] because I definitely fell in love beebeeee

In the full review, the fragrance is described in specific sensory terms before reaching the

[6] A song by the American rapper Cardi B.

[7] The fragrance under review is named *Instant Crush*.

more associative, character-adjacent descriptive elements. It is described as *dense*, *fruity* and *sweet* in comparison to another fragrance, Francis Kurkdijan's *Baccarat Rouge*.

The element of description which contains narrative-adjacent elements— the imagery of a woman drinking too much and vomiting, but rallying and continuing the party— is used to describe one specific aspect of the fragrance: its deceptive level of longevity. This is less to do with the actual *olfactive* element of the overall sensory experience of the perfume, but rather describes the of how those olfactive elements are experienced in the context of the perfume as a consumer product.

7.6 Conclusions

In this chapter, I have investigated how reviewers use characterisation and place to communicate specific olfactory information. The main patterns in the content of the descriptions are similar to those which we glimpsed early in this thesis, in Section 4.1.1 on appearance: many of the examples explored here have to do with attraction and desirability, both in a physical sense and in a more socio-cultural sense of aspiration, lifestyle and wealth.

When reviewers use these narrative elements as sources of description for an olfactive experience, they are generating an image with a general sensory 'fingerprint'. That is to say that the general visual or broadly perceptual description of a particular person, place or situation has a certain feeling to it, which broadly lines up with the sensory fingerprint perceived in the reviewer's experience of the fragrance which is being described. By communicating this fingerprint through their description of the imagined person or place, the reviewer allows the reader to recreate this picture in their mind's eye, and then, because our conceptualisation of sensory meaning is so closely interlinked between sensory modalities, to imagine in their mind's nose what a fragrance with a similar sensory fingerprint might be. Through this communicative strategy, which relies upon a contiguous semantic domain of perceptual experience, it is possible to communicate if not the precise components or notes contained in a sensory experience, but to communicate a broadly accurate feeling of the impression the fragrance has left on the reviewer.

This chapter is the fourth and final analytical chapter in this thesis, and has provided important evidence for how olfactive language works in instances which contain more creative, narrative-driven descriptions. The following concluding chapter will bring this evidence

together with the evidence laid out in the preceding chapters which focused more on simpler, generally source-based types of description, and explain in a synthesised way how the evidence presented throughout this thesis answers the research questions established in its introduction.

Chapter 8

Conclusion

The preceding analytical chapters have shown three main points in relation to how the sense of olfaction is rendered linguistically, based on a thorough investigation of the evidence gathered from the corpus and analysed throughout this thesis. This final chapter will serve to clearly explicate these conclusions by synthesising the main evidence discussed in the previous four chapters, and situate those findings within the body of scholarly work on sensory linguistics as it currently stands.

These conclusions answer the questions which this thesis aims to investigate, outlined in Chapter 1. The central aim of this thesis is to establish which words and linguistic strategies English speakers use to communicate complex olfactory experiences, in light of the ineffability of olfaction in English. It also aims to investigate two sub-questions, namely to establish the semantic domains from which olfactory-descriptive words originate, and by what semantic processes their use is motivated; and to determine whether the use of words typically associated with other senses to describe olfactory experiences represents a metaphoric transfer of meaning. These questions are considered in light of the fact that the dataset used to answer them is from a very specific source, taken from a dedicated community which may have its own linguistic patterns which are not necessarily fully reflected in general English.

Of the three main conclusions which can be drawn from the analysis in this thesis of the linguistic data, the first considers instances where source-based descriptors are used as points of sensory comparison: in most cases where such descriptors are employed, non-olfactory sensory components of those words' semantic frames are significant in the communication of olfactive meaning. This conclusion was evidenced mainly from the examples analysed

in Chapters 4 and 5, which mainly used such source-based, analytical description. This represents one of the major strategies used to communicate olfactive meaning in the language of the corpus: the use of broad, cross-modal sensory descriptions which rely on the evocation of accessible, holistic sensory experiences.

The second, and closely related, point is that explicitly non-olfactive comparators (for example colour terms, many terms to do with people and places, and especially terms from the domain of sexual attraction) can be used to encode olfactive meaning, through connotation and association. This point is especially visible in the language investigated in Chapters 4 and 7, which contained a great deal of olfactive description which relies on comparators which do not have a distinct olfactive component to their denotation. This is a second key strategy which is often adopted by speakers to communicate their olfactory experiences. Associative meaning is also a key semantic mechanism by which the use of words from semantic domains which are fairly distant to the sense of olfaction (detailed below) is motivated.

The third conclusion, drawn mainly from the cross-sensory language investigated in Chapter 6, is that some sensory descriptors can have broad, cross-domain meanings, even if they have a prototypical meaning firmly within one sensory modality. This pattern is especially apparent between sensory modalities which have physiological and experiential links, like those of smell and taste. These three observations, evidenced by language from the corpus throughout the previous chapters, point towards a major conclusion of this thesis: that the semantic domains which are underpinned by our sensory perceptions and experiences are not discrete and separate entities of meaning and understanding split neatly by modality, but rather represent a broadly contiguous domain of sensory experience; a semantic network which contains many complex links within and between the modalities represented in the 'five senses' folk model. This means that such cross-modal language use is typically not metaphorical in nature, but rather that many sensory words, especially those with close experiential links, can be said to be monosemous between the sensory modalities to which they can be applied.

This concluding chapter will discuss each of these three points in turn, bringing together evidence discussed in the four main analytical chapters presented previously in this thesis and discussing their relevance to the research questions established in Chapter 1 in a synthesised final discussion. The conclusions reached in this chapter, and throughout this thesis, broadly agree with existing literature in the field, aligning with the conclusions drawn by much recent

work in sensory linguistics.

8.1 Non-olfactive components of semantic schemata

The first main conclusion which can be drawn from the corpus data investigated by this thesis is that in many cases where olfactory experiences are verbalised using a source-based descriptor (e.g. a fragrance *smells like cherries*), non-olfactive components of the descriptor's semantic schema are also important in the communication of meaning. This conclusion is mostly apparent in the data analysed in Chapters 4 and 5, which dealt with mainly description involving some degree of cross-modal language. In the case of Chapter 5, this was always in the context of direct comparisons to real-world objects with distinct olfactory identities. In many of the examples analysed in those chapters, reviewers often specify aspects of referents which do not affect their odour, for example a fragrance which *smells like* ***juicy*** *cherries*. The *juicy* in this description does not carry an inherent olfactory meaning, but rather implies a particular appealing olfactory quality through experiential association—juicy fruit is ripe, enjoyable, and generally has a more appealing smell. This use of non-olfactive adjectives to highlight a perceptual, but not olfactive, component of the comparator indicates that specifically olfactive meaning can be communicated through the generation of a broader sensory construal which is bolstered by description from multiple sensory modalities.

This pattern was apparent from many of the collocate lists given in the previous chapters, like the strong collocation of *cherry* with *tart*, *apple* with *juicy* and *crisp*, and *spice* with *warm*. These collocates are all words which are part of the sensory experience of interacting with the descriptor, but which are experienced through modalities other than olfaction. By invoking these aspects of the real-world referents being used to describe the fragrance, the reviewer is able to generate a clearer and more holistic sensory construal. In this way, the description better calls to mind the experience of eating or otherwise interacting with the object, including its ineffable olfactory component. In this way, the complex olfactory experience is communicated more clearly through a holistic, cross-modal sensory evocation.

Important to this conclusion is the gestalt structure of semantic schema: when an expression refers to part of this structure of knowledge, the whole structure is made conceptually accessible. Evoking one sensory part of the schema provides conceptual access to the whole experientially-rooted body of knowledge we have about the descriptor, including its olfactive

component. By emphasizing the (non-olfactive) sensory aspects of this knowledge structure, the adjacent olfactory knowledge is also made accessible, and is more readily available to communicate olfactive information.

This pattern represents part of the answer to the main question asked by this thesis. One of the linguistic strategies adopted by speakers who wish to communicate complex olfactory experience (such as the fragrances which are under review in the data investigated here) is to augment source-based description with additional sensory information in order to generate a more vivid construal which is more accessibly grounded in experiential knowledge. By doing this, we are able to effectively communicate aspects of the experience for which dedicated vocabulary does not exist.

8.2 Associative meaning and olfaction

The conclusion outlined in the above section, the importance of additional, non-olfactory aspects of descriptors in communicating olfactory meaning, is very closely related to another conclusion of this thesis, that olfactive meaning is often communicated through associative and connotative meaning. This is distinct from the point made above in that instead of emphasizing a non-olfactory component of a sensory schema in order to generate a specific sensory construal, examples which rely on associative meaning do not rely on sensory description directly. Instead, they rely on elements which have associated sensory characteristics, but the reader must fill in the sensory blanks of the description in order to access that sensory meaning. This strategy was employed by some of the examples in Chapter 4, and by almost all of the examples in Chapter 7.

Associative meaning— that is, 'the communicative value an expression has by virtue of what it *refers to*, over and above its purely conceptual content' (Leech, 1981, p.12)— is crucial in understanding how domains seemingly so semantically distant from the sense of olfaction as the ones explored in Chapter 4 like the domain of TIME and the complex narrative-based descriptions analysed in Chapter 7 can be used to communicate a purely olfactory sensory experience. Leech (1981, p.14) notes that such meaning can vary between individuals based on their own thought processes, experiences and biases. This adds a layer of complexity to olfactive descriptions which employ associative meaning, in that the olfactive associations held by the reviewer may not necessarily overlap with those held by the reader trying to

'picture' the fragrance.

In the examples which employ associative meaning, the reviewers' olfactive experiences are not being described analytically, in direct terms of *what* they are smelling. Rather, the reviewer is relying on our associative real-world experiences. They are taking the associations we have with certain descriptors, and telling us that those associations also apply to the fragrance they are smelling. This pattern is especially apparent in the narrative-led descriptions of Chapter 7, where reviewers play on the associations we have with characteristics like age and wealth in order to communicate olfactory information.

This is the second part of the answer to the main question asked by this thesis. A main linguistic strategy employed by speakers who wish to communicate ineffable olfactory information is to rely on associative meaning, and use descriptors which do not inherently contain much in the way of olfactive aspects but which are able to impressionistically communicate something of the nature of the experience at hand. By adopting this strategy, and especially by generating complex descriptions with many different points of association like those in the examples analysed in Chapter 7, it is possible for speakers to communicate complex olfactory information in an effective, and often creative, manner.

8.3 Contiguous domain of perception

These two conclusions can be used to support the main argument of this thesis, that the traditional five sensory modalities are generally not separate and distinct semantic domains, but rather a contiguous domain of perception within which speakers can form cross-modal, but intra-domain, correspondences of meaning. This is supported by the conclusion described in Section 8.1, about the importance of non-olfactive elements of sensory schemata, by the clear overlap that exists in those examples between olfactory experience and description within other sensory modalities. The conclusions outlined in Section 8.2 also support this point in that associative meaning as it is employed in the language of the corpus is often inherently cross-sensory, with multiple sensory modalities being important in the communication of the olfactive.

There are many specific examples of description from the corpus, especially from Chapter 6, which indicate that many (but, importantly, not all) sensory terms have meanings which can be applied literally and cross-modally to olfaction. Chief among these is the word *sweet*,

which is one of the most frequent words in the corpus— it ranks 47th in overall frequency, and 5th behind only *like*, *very*, *one* and *more* in the frequency ranking of adjectives. The word itself was analysed in Chapter 6, and food terms associated with sweetness like *sugar* and *candy* were analysed in Chapter 5. The frequency of *sweet* and the fact that many words to do with sweetness appear in the descriptions analysed in this thesis are both strong indicators that the term, and the concept, is not strictly confined to the modality of taste.

Instead, the evidence presented here suggests that while words like *sweet*, *tart* and *bitter* may have a prototypical part of their meaning centred within the modality of taste, this meaning extends literally into physiologically and experientially linked sensory modalities within a contiguous domain of perception. This pattern can also be seen with other modalities, where fragrances which are overbearing in their volume of sensory perception are described as *loud*, or those too subtle as *quiet*. Elements of a fragrance may fall *silent*. Within the domain of touch, fragrances can be *soft* or *abrasive*; or, from the modality of sight, *bright* or *dark*. In light of this highly frequent and unremarked-upon use of these sensory terms, and of the very frequent use of descriptors from across the sensory modalities employed throughout the descriptions analysed in the body of this thesis, it is possible to say that the literal meaning of many sensory words is applicable across multiple modalities without any metaphoric transfer of meaning.

While many sensory words do exhibit such cross-domain meanings, it is important to note that not all sensory words can be applied equally to all sensory modalities. A fragrance or a piece of music can easily be described as *sweet* or *bright*, for example, but to describe the texture of some fabric using the same terms does not have an accessible cross-modal meaning. Similarly, while the fabric could be described as *leathery* or *fuzzy*, it is difficult to imagine what a piece of music desribes as such would sound like. The conclusion of this thesis is not that all sensory terms are applicable cross-modally without metaphoric transfers of meaning, but rather that terms which do exhibit cross-modal use in real-world examples generally do so in a monosemous and literal way. Because there is an experiential and physiological link between the modalities of taste and olfaction, there consequently exists a semantic and lexical link which reflects it. Words from modalities which do not have such a perceptual link (or which do not refer to what Rakova (2003) terms 'psychologically primitive concepts' which apply across domains, like *bright*) do not exhibit this cross-modal but literal pattern of usage.

The conclusion presented here also aligns with much existing work in the field of sensory

linguistics. It accords with work by Winter (2019), who asserts that cross-modal language is generally not metaphorical (however some elements of the analysis in this thesis disagree with details of Winter's analysis, namely the degree to which sensory terms communicate evaluative meaning discussed in Chapter 6). A similar conclusion is also made by Rakova, who advocates for a 'no-polysemy view of conceptual structure' (Rakova, 2003, p.68). In this view, words like *bright* represent psychologically primitive concepts which are applicable across sensory modalities, even if the specific character of brightness is not identical between a bight light, bright music, and a bright fragrance. This accords with the view taken here, that many sensory terms have broad meanings which span across perceptual modalities. In a study which is methodologically similar to this one, Paradis (2015a) reaches a similar conclusion. By analysing wine reviews, Paradis argues that in expressions like *soft smell*, the word *soft* does not primarily evoke the domain of touch, but rather represents a strong interrelation of sensory experiences in a cognitive sense. That viewpoint is echoed here and is supported strongly by the evidence presented from the olfactive domain in the previous chapters.

This final conclusion is also supported by evidence from the cognitive sciences. Spector & Maurer (2012), in an experimental study testing cross-modal associations between vision, touch and olfaction, asked participants to make colour and shape/texture associations to different odour stimuli. The associations made by the participants were very consistent, indicating strong links at the conceptual level which span across the perceptual modalities and form a contiguous domain of perception in a cognitive sense.

This conclusion provides the final piece of the answer to the main question posed at the beginning of this thesis. A major strategy for describing olfactory experience is to employ those sensory-descriptive words, like *sweet*, which have the prototypical part of their meaning rooted within another sensory modality. This process also answers the third and final question posed by this thesis: such sensory language is generally not metaphorical in nature, but rather those sensory terms which can be used across different sensory modalities can be said to have monosemous meanings which are applicable across those modalities.

8.4 Limitations and future directions

While the conclusions explicated in this chapter are based on analysis of a robust and relevant data set, there are some limitations inherent with this study and its methods, and also some

promising directions which future research could take to further investigate the claims made throughout this thesis.

Firstly, the research undertaken in this thesis is somewhat limited by its data source. Fragrance community sites like Fragrantica—and others like Basenotes, used by Hörberg et al. (2025)—are valuable sources for the study of olfactory language because they contain text which is extremely rich in language which is directly and specifically to do with smell. However, the communicative goals of the authors of these texts may make it difficult to make general conclusions about the relationship between olfaction and language, and many reviewers' strong interest and expertise in the world of the olfactive means that the dataset is not fully representative of general language. In the specific textual and social context of a public post which can be given likes, reviewers may focus less on communicating accurately and naturally the things they are smelling and be incentivised instead to write amusing or entertaining prose. Their intended audience is those already part of the fragrance community, who share a degree of domain-specific experiential knowledge. This knowledge, likely much greater than that of an everyday speaker of English, means that the dataset used here is somewhat limited in its representativeness. This is however a worthwhile trade-off in order to obtain such a large dataset which consists almost entirely of spontaneously generated, useful and analysable olfactive description. Future work could consider similar research questions as those explored in this thesis but with a broader dataset from multiple sources which are less domain-specific and more easily generalised to everyday, non-expert speakers. This may be difficult to accomplish given the much lower density of olfactive description in day-to-day language compared to dedicated fora like Fragrantica, but the results of studies like this one from such specific sensory domains can be used as a point of comparison for future work employing datasets from which it may be easier to generalise.

The second main limitation of this thesis is that it has approached cross-domain sensory language unidirectionally, only from the perspective of olfaction. Future work could consider the points made here about how cross-modal language works in an olfactory context and apply those theories to data from the other senses— for example, to investigate whether cross-modal correspondences between the senses of taste and sight, or hearing and touch, display the same patterns of use as the olfaction-rooted correspondences explored here.

Additionally, because the language which is studied in this thesis is taken from an online source with a significant US user-base, much of it is rooted in varieties of English from the

United States. This US bias is apparent in much of the data presented in the previous chapters, for example in Chapter 5 where the word *candy* was seen to be much more frequent than its British English or Australian English counterparts. A possible direction for future work is to investigate how different varieties of English conceptualise and talk about odours— fruitful research could be undertaken to investigate, for example, the degree to which sociocultural and geographical factors affect the comparisons made when speakers describe odours.

8.5 Final remarks

The preceding chapters have provided a detailed analysis of the sensory language of fragrance reviews in order to achieve the main aim of this thesis, to determine the words and linguistic strategies used by speakers who wish to communicate complex olfactory information. Through interrogating a purpose-built corpus of specifically olfactive language, I have argued that the main strategies are the augmentation of source-based language with additional sensory information; the communication of associative meaning; and the use of descriptive terms whose prototypical meanings originate in other sensory modalities.

The evidence presented throughout this thesis also evidences the idea that such cross-modal language use is typically not metaphorical in nature. From the olfactory data, I have argued that the meanings of many sensory terms are often applicable literally across multiple domains, reflecting the conceptual nature of sensory perception as a densely interconnected and contiguous domain. This thesis has however focused entirely on one sensory modality, and future work is required to determine the extent of these cross-sensory relationships in other modalities which are better served by the English lexicon.

As established in the beginning of this thesis, olfactory experiences are generally considered to have a higher degree of ineffability than the other senses—compared to sights, sounds, physical sensations or tastes, smells are hard to describe. This thesis has shown the ways in which speakers navigate this lexical difficulty, and offered an analysis of the strategies which we adopt to do so. Olfaction may be ineffable in a direct lexical way, but there are nonetheless a variety of linguistic tools available to us when we wish to put the things we smell into words.

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