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Conceptualizing Color in English and Dutch: A Semantic Tree Analysis of Lexical Items

MA thesis

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1. Abstract

This thesis investigates the semantic divergences and extensions of five basic color adjectives—*black/zwart, white/wit, red/rood, blue/blauw,* and *green/groen*—in English and Dutch. Grounded in the theoretical framework of Cognitive Linguistics and drawing on the principles of lexical semantics, the study explores how these color terms extend metaphorically and metonymically across the two languages, offering insight into both shared and language-specific conceptualizations of color.

The analysis draws on two large-scale web corpora accessed via Sketch Engine: the English Web 2021 corpus (enTenTen21, ~52.3 billion words) and the Dutch Web 2020 corpus (nlTenTen20, ~5.9 billion words). Collocational behavior was examined in two syntactic environments—adjective-noun modification and predicative constructions (be + adjective)—selected for their productivity in revealing semantic salience. For each color term, the top 100 collocates were extracted based on logDice scores, which favor strongly associated and informative word combinations. A random sample of 50 concordance lines per collocate was then manually analyzed to identify instances of literal, metonymic, or metaphorical usage.

The findings suggest that while both English and Dutch color terms show systematic patterns of semantic extension, English adjectives more frequently exhibit abstract and metaphorical usages, such as in emotional or evaluative domains (e.g. *blue mood*, *black humor*), whereas Dutch tends to favor more concrete, metonymically grounded associations. These results provide nuanced insights into the polysemous structures of color concepts and contribute to our understanding of how closely related languages map meaning within radial semantic networks.

2. Introduction

Color is one of the most immediate and powerful ways in which people describe the world around them. Yet beyond their surface function of naming shades, color terms often carry traces of how speakers see, feel, and understand their environment. They belong not only to the language of vision, but also to the language of thought. While all languages rely on color words, the meanings attached to them can differ in striking and unexpected ways across cultures. Exploring these differences offers a window into how language gives shape to experience. This thesis examines the patterns of meaning and use of color terms in English and Dutch, with the aim of tracing the connections between language, perception, and cultural knowledge.

The exploration of color semantics has historical roots in the broader cognitive revolution of the 1970s, a period characterized by significant shifts in how language and cognition were understood. Prominent researchers of this era, such as Rosch (1978), Lakoff and Johnson (1980), and Talmy (1975), revolutionized linguistic theory by emphasizing the integrated nature of language and other cognitive faculties, including perception, memory, and reasoning. As Langacker explicitly states, 'language is an integral facet of human cognition' (Langacker 1987: 12), highlighting that meaning cannot be isolated from the wider processes of perception and categorization that structure human understanding. A long-standing debate within linguistic theory revolves around the extent to which language shapes human thought — a question most famously captured in the principle of linguistic relativity created by Benjamin Lee Whorf (Caroll 1956). Traditionally, this debate has been framed through the distinction between the *strong* and *weak* versions of linguistic relativity. The strong version, often associated with early interpretations of Whorf's work, posits that language fully determines thought: without access to particular linguistic resources, certain conceptualizations would be impossible, implying language is a "straightjacket" (Evans, 2019:188) limiting their capacity for abstract or complex thought. In contrast, the *weak* version of linguistic relativity — now widely endorsed within cognitive linguistics — maintains that language influences, but does not determine, human thought. Language is thus understood not as a barrier to cognition, but as a lens that can guide attention, shape habitual patterns of categorization, and influence conceptual preferences (Evans, 2019:189). Such an approach aligns with what has been termed the neo-Whorfian view — a contemporary reinterpretation of Whorf's insights that rejects linguistic determinism while recognizing the subtle yet pervasive ways in which language interacts with thought (ibid.).

The arguments supporting the weak theory in fact stem from the research on color words. Heider and Olivier (1972:18-19) have proven that language influences but does not determine thought by exploring the

capabilities of Dani people, who possess only two basic color terms—roughly corresponding to ‘light’ and ‘dark’, however, were able to recall and distinguish between colors effectively. This finding suggests that certain colors, particularly those aligned with universal focal points such as red or blue, exhibit a degree of cognitive salience that transcends linguistic categorization, enabling accurate perception and recall even in the absence of corresponding lexical labels (Heider & Olivier 1972:19-20).

The primary aim of this thesis is twofold: first, to identify and explain semantic divergences in the metaphorical and metonymic extensions of color terms in English and Dutch; and second, to offer broader insights into conceptual categorization mechanisms through the analysis of naturally occurring corpus data. To this end, the study adopts a corpus-based, lexicographic approach, combining quantitative methods with qualitative, context-sensitive analysis, analyzing the radial networks (Lakoff 1987) of color words in English in Dutch.

While individual studies have examined radial networks, such as Tyler & Evans (2003), the cross-linguistic exploration of these networks remains a relatively uncharted territory. Although linguistic items of color have been studied from a cross-linguistic point of view (Philip 2003; Philip 2011; Chatti 2016; Kalda & Uusküla 2019), truly little research draws on cognitive linguistics or, namely, radial network approach to consider the differences between words of color cross-linguistically. This study seeks to explore the divergences of color concepts between English and Dutch by analyzing the contrasting senses of meaning in radial networks of corresponding color items.

The distinctive contribution of this research resides in its nuanced examination of the intricate interplay between linguistic structures and cultural influences in shaping radial networks for color terms. By scrutinizing the radial networks of linguistic items of color in both languages, this research aims to complement the scholarly discourse by offering a non-conventional method of qualitative analysis, as well as incorporating the quantitative concepts of corpus linguistics to account for the reliability of the data. In adopting such an approach, this study anticipates determining subtle yet substantive insights, thereby advancing the academic discourse on the sphere of color semantics cross-linguistically.

Guiding this detailed exploration are two primary and interconnected research questions:

1. How do specific color concepts in the English and Dutch languages differ semantically in their range of meanings and conventional usage?

2. What specific semantic extensions, particularly metonymic and metaphorical, emerge from a detailed analysis of the color terminology in these two closely related languages, and how can they be compared?

To effectively answer these central research questions, this thesis adopts a primarily lexicographic approach centered around the detailed analysis of semantic trees. In this context, color-related lexical items in both English and Dutch will be analyzed in a structured manner to better understand the linguistic and cultural differences between the two languages. Through a rigorous process of corpus-based data extraction, utilizing large and representative linguistic corpora and advanced computational tools such as Sketch Engine, this research will systematically analyze and carefully contrast the semantic networks of a carefully selected set of corresponding color terms in English and Dutch.

3. Literature Review

A key concern within cognitive linguistics is the study of semantic extension — the process through which words develop meanings beyond their original, literal sense. Recent work in cognitive linguistics confirms that word meaning is "protean" (Evans 2006:119), meaning it rather shifts commonly, instead of having fixed definitions. Two central mechanisms driving this process are metaphor and metonymy, which operate according to distinct cognitive principles. Conceptual Metaphor has been thought to involve understanding one conceptual domain in terms of another, typically by mapping structure from a more concrete source domain onto a more abstract target domain (Lakoff & Johnson 1980). Lakoff and Turner (1989:103) distinguish conceptual metonymy from metaphor by arguing that, unlike metaphor's cross-domain mappings, metonymy operates within a single domain, allowing one entity to stand for another based on conceptual contiguity or proximity. Substantial issues can be named when describing the Conceptual Metaphor Theory (Lakoff & Johnson 1980), such as Evans (2019:322) describes:

a) Problem of distinguishing between target and source: conceptual metaphors are often described as mappings from concrete, easily apprehensible domains onto more abstract domains; however, the distinction between 'concrete' and 'abstract' is not always clear-cut.

b) Problem of target domain literal structure: the Invariance Principle (Lakoff 1990), stating that only source elements compatible with the target domain are mapped, applies when target domains lack clear pre-existing structure, given that metaphorical meaning is often built through mappings from source domains.

c) Problem of mapping gaps: gaps arise when only certain aspects of a source domain are mapped onto a target domain, often in ways that vary across languages and cultures, challenging claims of metaphor universality.

I have chosen conceptual metaphor theory as the primary theoretical framework for this thesis, as its established methodological tools and analytical clarity make it particularly suitable for the scope and time constraints of an MA project, although I remain aware of its theoretical limitations and the existence of alternative approaches.

Another important aspect of my thesis is the notion of collocation. Given that the meaning of color terms often emerges from their repeated use in specific lexical environments, analyzing their collocational patterns offers critical insight into the cognitive structures and culturally grounded associations that shape their semantic extensions. Philip (2011:2) metaphorically depicts collocations as midfielders:

> So words are not entirely devoid of meaning, they are, instead, potentially meaningful, but the actual meaning they are to express cannot be selected without contextual cues. The principle can be illustrated with reference to the world of sport: a midfielder cannot play football alone, in fact a midfielder is not even a "midfielder" but only a person kicking a ball unless all the other members of the team are in place.

In cognitive linguistics, meaning is not fixed but emerges from use. Collocations—frequent co-occurrences of words—reflect how speakers habitually conceptualize certain ideas. For color terms, which are notoriously polysemous and culturally variable, their collocates help reveal the conceptual metaphors, metonymies, and semantic frames they participate in. Therefore, the study of collocations is central not only to understanding meaning relations in language but also to revealing patterns of conceptualization and metaphorical thinking.

The last notion needed to analyze in extension of meaning is radial networks. Johnson (1987:2) introduces the term 'image schema', presenting that these recurring patterns of embodied experience provide fundamental structure for human thought and meaning. Evans (2019:239) lists the main features of image schemas:

> Image schemas have a number of key characteristics: they are pre-conceptual in origin; they give rise to more specific concepts; they derive from interaction with and observation of the world; they are inherently meaningful; they are analogue in nature; they are multimodal; they are subject to transformations; they occur in clusters; they underlie linguistic meaning; and they give rise to abstract thought.

Building on Johnson's (1987) concept of image schemas, Lakoff (1987) further explored their central role in the structure of conceptual categories, and formed the concepts of radial structure and category, which inspired this research. *Radial category* describes the full range of related senses within a concept, organized around a central, prototypical meaning (Lakoff 1987:91). In contrast, radial structures (Lakoff 1987:83), word meanings are organized around a central, prototypical sense, with additional, less central senses extending outward in motivated ways. Lakoff (1987:114) also distinguishes metaphoric mappings as cross-domain and image-schematic, while metonymic mappings operate within a single domain, allowing one element to stand for another. Mandler (2004) later argues that an infant's conceptual system is constructed from basic image-schematic structures, which emerge because of extracting meaning from perceptual experience through a process she terms perceptual meaning analysis.

This literature review outlines further how semantic extension has been approached in linguistic research, moving from structuralist accounts to cognitive models. Special attention is given to studies focusing on color terms, which form the theoretical basis for the present study.

First, Harmon and Kapatsinski investigate how frequency influences semantic extension and argue that high-frequency forms are more likely to be extended to novel meanings during production, due to their increased accessibility (2017:21). Three experiments have been conducted for the paper. Experiment I involved comprehension, production, and form choice tasks, with the production task following exposure, as the authors created two artificial languages (Harmon & Kapatsinski 2017:26). Their artificial language study showed that participants tended to overuse highly frequent forms to express new meanings when producing language, even if those forms were rarely interpreted as having that meaning in comprehension tasks (Harmon & Kapatsinski 2017:28-29). Experiment II altered the task order, presenting the form-to-meaning mapping task first (Harmon & Kapatsinski 2017:31). Participants were significantly less likely to extend frequent forms to the novel diminutive plural meaning in production, suggesting that prior comprehension reinforced entrenchment (ibid.). Experiment III placed the form choice task before the comprehension task (Harmon & Kapatsinski 2017:33) and found no effect in frequency (ibid.). One of the essential conclusions of this study states that high frequency makes a form more accessible and likely to be extended to new meanings in production, however, it also leads to the form being more strongly associated with and restricted to its original meaning in comprehension (Harmon & Kapatsinski 2017:42). These findings are particularly relevant for the present study, which examines the semantic extension of color terms—frequent and entrenched lexical items that nevertheless exhibit a wide range of context-dependent and metaphorical meanings. Just as Harmon and Kapatsinski (2017) show that high-frequency forms are both more accessible in production and more resistant to reinterpretation in comprehension, color terms often remain semantically stable in literal contexts but are readily extended in figurative or affective usage.

Another study has been conducted in the field of translation. Kalda and Uusküla (2019) conducted an experimental study on the translation of English color metaphors into Estonian, highlighting the challenges posed by culture-specific metaphors and the crucial role of context. Their results showed that well-established metaphors with shared cultural grounding were usually translated consistently, while novel or culture-bound metaphors triggered a wide range of strategies — from preserving the metaphor to paraphrasing, omitting, or even mistranslating it (Kalda & Uusküla 2019: 701). Interestingly, they conclude that translators having lived in English-speaking countries showed better performance in managing the translation of metaphors (Kalda & Uusküla 2019: 702). These insights support the present study's focus on semantic extension in color terms by underscoring how culturally embedded metaphors complicate

straightforward mappings of meaning and how context and conceptual familiarity shape the accessibility of extended senses across languages.

Barchard, Grob, and Roe (2017) investigated whether figurative language used to describe emotions — particularly metaphorical associations with color and spatial terms — is interpreted consistently across cultures. Their study tested English-speaking participants from the USA and India on 14 common emotion-descriptor pairs, revealing that only two associations (happiness with up and happiness with bright) were both universal and unambiguous (Barchard et al. 2017: 452). In contrast, associations such as sadness with blue or fear with cold showed significantly less agreement, particularly among Indian participants, suggesting cultural variability and interpretive ambiguity. Moreover, several descriptors were associated with multiple emotions, reinforcing the idea that figurative language rarely maps cleanly onto single concepts (ibid.). The study supports the view that semantic extensions of basic color terms — such as those investigated in this thesis — must be understood within their broader cultural and linguistic context, rather than assumed to reflect universal conceptual structures.

Philip (2003) provides one of the most comprehensive corpus-based investigations into the figurative use of color terms, focusing on English and Italian. Her study uses large general reference corpora, CORIS and Bank of English, to analyze the behavior of color terms in naturally occurring language (Philip 2003:110). She compares the differences in data presented according to t-score and mutual information scores (ibid. 104), which will be needed for this study, as I have encountered this specific issue with my data. The author also employs the key word in context (KWIC) function to view concordances (ibid. 101). Philip (2003: 163–164) concludes that connotative color meanings in language operate in two key ways: they are both grounded through metonymic links (e.g. red for anger, via physiological responses) and culturally reinforced through repeated linguistic usage. Language thus functions as both evidence of figurative meaning and a constraint on semantic creativity (Philip 2003:163). This aligns with Philip's broader claim that meaning arises through the interaction of syntagmatic and paradigmatic axes, and that deviations from entrenched usage—rather than the expressions themselves—trigger connotative interpretation (2003: 325). It also serves as an empirical foundation for the present study's analysis of radial networks, illustrating how individual senses of color terms are often motivated by embodied or socio-cultural associations rather than static symbolic systems.

While there is a substantial body of research on color semantics and semantic extension more broadly, this review has focused on four studies drawn from distinct areas of linguistic inquiry — experimental psycholinguistics, translation studies, cross-cultural semantics, and corpus linguistics. This selection is

intentional: rather than exhaustively cataloguing prior work on color terms, the aim is to foreground a diverse set of perspectives that collectively frame the theoretical landscape of this thesis. Harmon and Kapatsinski (2017) highlight how frequency shapes the tension between productivity and entrenchment, a pattern that mirrors the behavior of highly frequent color adjectives. Kalda and Uusküla (2019) demonstrate the role of cultural familiarity and contextual framing in the translation of metaphor, directly relevant for cross-linguistic comparison. Barchard et al. (2017) challenge assumptions of universality in figurative color-emotion mappings, reinforcing the importance of empirical and culture-sensitive analysis. Philip (2003) offers a richly detailed corpus-based model for tracking metonymic and metaphorical extensions, providing methodological grounding for the present study's approach to radial networks. By drawing from across disciplinary boundaries, this review establishes the conceptual foundation necessary to explore how color terms in English and Dutch extend meaningfully and divergently across literal, metonymic, and metaphorical domains.

4. Data and Methods

4.1. Materials

The empirical data for this research were extracted from the online corpus tool Sketch Engine (enTenTen21 and nlTenTen20), specifically through its Word Sketch function. This function generates detailed collocational profiles for lexical items by statistically analyzing their syntagmatic behavior within a given corpus. Word Sketches offer syntactically organized collocate lists (e.g., modifiers, objects, subjects) based on parsed and lemmatized text, enabling researchers to explore semantic patterns and usage tendencies across a wide range of contexts. The tool is especially well-suited for studies in lexical semantics and cognitive linguistics, as it facilitates the identification of metaphorical and metonymic extensions through syntactic environments where lexical meaning is foregrounded, such as attributive and predicative adjective usage.

For this study, two large-scale web corpora were selected to represent English and Dutch: enTenTen21 and nlTenTen20, respectively. The English Web 2021 corpus (enTenTen21) contains approximately 61.6 billion tokens and 52.3 billion words, compiled from a variety of English-language websites collected between October and December 2021. It covers a broad spectrum of domains, genres, and registers, ranging from blogs and forums to news articles and commercial content. The Dutch Web 2020 corpus (nlTenTen20), although smaller in scale, is similarly structured, comprising approximately 6.8 billion tokens and 5.9 billion words from Dutch-language websites gathered between June and July 2020. Both corpora belong to the TenTen family of corpora, which are built using consistent web crawling and cleaning methodologies, ensuring a high degree of comparability across languages in terms of structure, metadata, and annotation standards.

The decision to use web-based corpora was motivated by their sheer size, domain diversity, and contemporary language coverage, which make them especially suitable for studying usage-based phenomena such as semantic extension. Moreover, the consistent format and processing pipeline across TenTen corpora facilitate cross-linguistic comparisons. Despite some limitations, such as a lack of spoken language data and the potential noise inherent in web texts, these corpora provide a robust empirical basis for examining color term behavior in naturalistic contexts across English and Dutch.

4.2. Selection of Color Terms

For reasons of feasibility and comparability, the analysis focused on five basic color adjectives in English and their Dutch equivalents, chosen based on their frequency and cross-linguistic representativeness. The selected items are presented in Table 1 below.

Table 1. Adjectives of color chosen for the study in English and Dutch.

English	**Dutch**
black	zwart ‘black’
white	wit ‘white’
red	rood ‘red’
blue	blauw ‘blue’
green	groen ‘green’

4.3. Analytical Procedures

The analysis targeted two syntactic patterns identified for the color adjectives in word sketches generated by Sketch Engine:

a) Adjectives modifying nouns (e.g. *green energy*, *rood licht* ‘red light’)
b) Adjectives occurring predicatively in be + adjective constructions (e.g. *the sky is blue*, *het gras is groen* ‘the grass is green’)

These patterns were selected, as they frequently foreground the salient semantic characteristics of adjectives, and are therefore especially productive contexts for metaphorical and metonymic extensions.

For each color term, the top 100 collocates — as ranked by log-dice — were extracted automatically. This choice was offered by Sketch Engine’s default settings; however, it is important to note that log-dice prioritizes frequent collocations and may underrepresent rare but semantically salient associations. For a discussion of the implications of different rankings of data tests, such as t-score, log-dice, and MI-score, see Sánchez Pérez et al. (2006), Fukuda (2022), and Zakharov (2017).

To assess the semantics of these collocates, a random sample of 50 concordance lines per collocate was examined manually. Each collocation consisting a color term and its collocate was then classified as exhibiting a general (literal), metonymical, or metaphorical use of the color term, based on contextual clues.

While the majority of concordances were relatively straightforward to categorize, a number of examples posed challenges due to overlapping or co-occurring mechanisms of semantic extension. In particular, some concordances displayed features of both metaphorical and metonymic meaning extensions simultaneously, complicating the process of classification. One illustrative case involves the adjective *green* in collocation with nouns such as *city*/*stad*. The phrase *green city* can refer metonymically to a city characterized by an abundance of vegetation, such as trees, parks, and other green spaces. At the same time, it may also metaphorically imply that the city is environmentally conscious—e.g., promoting sustainability or supporting eco-friendly businesses. In such cases, a strict separation between metaphor and metonymy becomes difficult, as the two mechanisms may interact or blend, reflecting the polysemous potential of color terms in natural language use. These instances were noted and discussed in the analysis, but no artificial disambiguation was imposed beyond what the immediate co-text supported.

4.4. Radial Networks and Categorization

Identified meanings were arranged into radial semantic networks, representing how different senses extend from a core literal meaning into metonymical or metaphorical domains. These networks were manually summarized in table form for clarity and comparability.

This methodological choice of presenting findings in table form rather than other visualization of semantic networks, while somewhat restrictive in terms of visual representation, ensures transparency and replicability of the categorization process.

5. Results and Discussion

This chapter presents the findings of the collocational analysis and discusses their implications in light of the research questions and theoretical framework outlined earlier. The analysis focuses on how five basic color adjectives—*black/zwart, white/wit, red/rood, blue/blauw*, and *green/groen*—behave in English and Dutch with respect to their literal, metonymic, and metaphorical uses. By examining the most strongly associated collocates within two syntactic environments (adjective-noun combinations and predicative constructions), the aim is to uncover patterns of semantic extension and assess their consistency, frequency, and conceptual motivation.

The discussion is structured around individual color terms, comparing their behavior across English and Dutch while identifying salient trends and divergences. Particular attention is paid to how figurative meanings emerge from specific collocational contexts, and whether these extensions align with known cultural, conceptual, or embodied associations. Where relevant, contrasts are drawn between the two languages to highlight cases of divergence in meaning scope or metaphorical framing.

5.1. Results for the log Dice-sorted Collocations

To establish a general overview of how metaphorical and metonymical extensions of color terms are distributed across syntactic contexts, a quantitative summary of the entire dataset is presented below. This section outlines the relative frequencies of each type of semantic extension—distinguishing between metaphor and metonymy—and maps these onto two key syntactic environments: noun modification and predicative constructions. The aim is to identify overarching structural preferences and cross-linguistic trends prior to delving into item-specific analyses. Figure 1 below visualizes these patterns and serves as a foundation for understanding the conceptual and grammatical tendencies that characterize extended color term usage in English and Dutch.

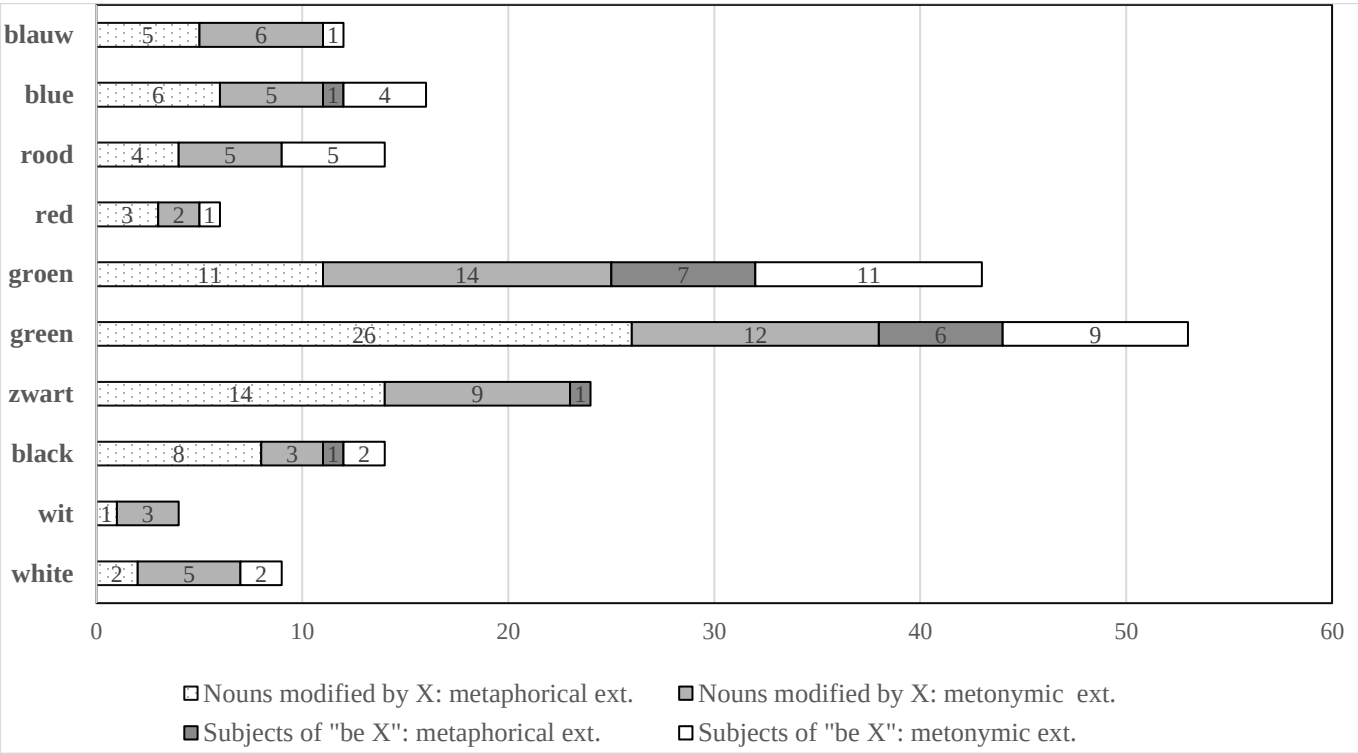

Figure 1. Metaphorical and metonymic extensions identified in the corpus, according to their relation to the adjective.

In total, 195 instances of extended color term instances were identified in the two corpora. These extensions were classified according to both their conceptual mechanism—metaphor or metonymy—and their syntactic environment, i.e., whether the color adjective modified a noun (*nouns modified by X*) or occurred in predicative position (*subjects of "be X"*). Among these, the overwhelmingly dominant pattern was that of noun modification, which yielded 80 metaphorical and 64 metonymical examples. Combined, these accounted for 144 out of 195 instances, or approximately three-quarters of all identified extensions. In contrast, the predicative pattern (*be X*) was substantially less frequent, producing only 16 metaphorical and 35 metonymical instances. These proportions suggest a strong preference for color terms to function as attributive modifiers, rather than as predicates, within the discourses represented in the data.

The distribution of these extensions is visualized in Figure 1, which presents the metaphorical and metonymical uses of color terms in both English and Dutch, grouped by their syntactic patterns. As the figure demonstrates, metaphorical extensions appear with particular frequency in the noun modification pattern—represented in the graph by the light grey bars—where they constitute the single most common extension type across the entire dataset. Metonymical extensions are also frequent in this syntactic environment (dotted grey bars), although to a somewhat lesser extent. The *subject of "be X"* constructions

(dark and white bars for metaphorical and metonymical uses, respectively) are noticeably less prevalent overall, especially in the case of metaphorical uses, which are represented by the smallest bars in the graph. Thus, the visualization reinforces the observation that metaphor is strongly associated with the attributive use of color adjectives, while metonymy exhibits a more even, though still patterned, distribution across syntactic contexts.

The preference for metaphorical noun modification is particularly salient in the cases of *green*/*groen* and *black*/*zwart*, both of which display high frequencies of this pattern in their respective languages. For example, English *green* occurs 26 times in metaphorical noun modification alone, making it the single most productive cell in the dataset. Dutch *groen* also features prominently, with 11 metaphorical and 14 metonymical noun modifications, and additional instances in both metaphorical (*7*) and metonymical (*11*) subject constructions. This broad distribution across extension types and syntactic environments positions *groen* as one of the most conceptually versatile and syntactically flexible color terms in the Dutch data. Similarly, *black* and *zwart* show notable productivity, particularly in metaphorical noun modification. Dutch *zwart* is especially dominant in this respect, contributing 14 metaphorical extensions in this pattern alone, along with a notable number of metonymical extensions. English *black*, while somewhat more balanced in distribution, still exhibits a clear preference for metaphorical over metonymical use, and for attributive rather than predicative constructions.

By contrast, color terms such as *white/wit*, *blue/blauw*, and *red/rood* are comparatively less productive across both languages. These color terms are attested less frequently in the data and do not exhibit a pronounced preference for any specific type of extension or syntactic environment. Interestingly, *blue/blauw* exhibits a relatively even distribution between metaphor and metonymy, and between noun modification and subject use, albeit with consistently low frequencies. This suggests that while *blue/blauw* may be conceptually available for a range of extensions, it is not especially salient or entrenched in extended uses in the data examined. *Red/rood*, on the other hand, remains relatively infrequent and shows no strong preference for one pattern or extension type over another.

From a cross-linguistic perspective, the visual data supports a high degree of parallelism between English and Dutch in terms of which colors are most frequently extended, and in which patterns. In both languages, *green/groen* and *black/zwart* emerge as the most productive colors, particularly in metaphorical noun modification. However, subtle differences emerge in the distribution of metonymical subject constructions. The Dutch data contains a higher number of metonymical predicative uses, particularly for *groen* and *rood*, whereas the English data shows a more concentrated preference for metaphorical attributive

constructions. These differences may reflect language-specific lexicalization tendencies, discourse conventions, or differing degrees of grammaticalization of color terms within predicative frames. In particular, the Dutch data suggests a greater flexibility in using color adjectives metonymically in subject position, often allowing these forms to function as substitutes for human referents, categories, or identities.

In summary, the patterns observed in Figure 1 reflect both cross-linguistic regularities and fine-grained structural preferences, underscoring the importance of syntactic context in shaping the conceptual behavior of color terms. While metaphor remains tightly associated with noun modification, metonymy shows a more varied profile that merits further investigation, particularly in relation to discourse functions and language-specific constraints.

5.2. *Green/groen* semantic extensions

This section discusses the patterns of metaphorical and metonymical extensions identified for *green* in English and *groen* in Dutch, based on the data extracted from word sketches and concordance examples. The analysis pays particular attention to the conceptual mechanisms involved in these extensions and their syntactic realization.

5.2.1. Metaphorical Semantic Extensions of *green/groen*

One of the most salient patterns observed in the English data concerns the metaphorical extension of the adjective *green* to denote eco-friendliness, sustainability, and environmental responsibility. This sense of *green* is highly productive and has become firmly entrenched in contemporary discourse surrounding climate change, renewable energy, and ecological innovation. Importantly, in these contexts, *green* no longer refers to the literal color of an entity but operates as a symbolic marker of its environmental value or ecological benefits. In the English data, the environmentally oriented meaning of *green* is strongly supported by a recurring set of collocates, which clearly reflect its conventionalized role in sustainability discourse. Specifically, *green* frequently co-occurs with nouns referring to energy production, technological innovation, economic models, and various aspects of environmental policy and development. These include *energy*, *infrastructure*, *city*, *economy*, *hydrogen*, *bond*, *thumb*, *flag*, *screen*, *belt*, *building*, *shoot*, *revolution*, *technology*, *job*, *initiative*, *credential*, *recovery*, *chemistry*, *future*, *growth*, *electricity*, *transition*, *paper*, *fee*, *home*, *building*, *planet*, and *finance*. The presence of these collocates illustrates the extent to which *green* has become firmly established as a symbolic marker of eco-friendliness and environmental value across multiple domains in contemporary English.

A clear illustration of this metaphorical use is found in the noun phrase *green hydrogen*, where *green* classifies a specific type of hydrogen produced using renewable energy sources rather than fossil fuels. This can be seen in the example:

(1) *The global energy industry is looking to **green hydrogen**, a carbonless fuel generated with renewable energy, as essential on the road to decarbonization and climate neutrality.*

In this instance, *green* signals the environmentally sustainable method of production rather than any physical property of hydrogen itself.

A similar metaphorical mechanism underlies the expression green technologies, which occurs in the context of economic recovery and sustainable development. Here, *green* designates technologies that are explicitly designed to support ecological goals, including energy efficiency, such as carbon reduction, or environmental protection:

(2) *The course will help develop government policy and economic recovery by producing top quality graduates who can contribute to a smart economy and hasten implementation of **green technologies**.*

Another use of this metaphor involves expressions like a *greener future*, where green conceptualizes an environmentally improved or sustainable state of the world as a desirable objective:

(3) *Leading the adoption of hydrogen technologies at scale for decades, we understand the revolutionary capabilities of hydrogen to reduce carbon emissions and pave the way for a **greener future**.*

These examples demonstrate a culturally conventionalized metaphorical extension of green in English, whereby the adjective functions as a shorthand label for ecological and sustainable values. The semantic shift from literal color to environmental symbolism reflects not only the entrenchment of green within environmental discourse but also its role in framing practices, technologies, and aspirations as environmentally desirable.

A similar pattern of metaphorical extension can be observed in Dutch, where *groen* likewise functions as a highly conventionalized marker of eco-friendliness, sustainability, and environmental value. Much like its English counterpart, Dutch *groen* frequently occurs in environmental discourse. Specifically, *groen* co-occurs with nouns referring to energy, technology, and social domains associated with sustainability, such as *stroom* (‘stream’), *energie* (‘energy’), *gas* (‘gas’), *waterstof* (‘hydrogen’), *economie* (‘economy’),

onderwijs (‘education’), *stad* (‘city’), *toekomst* (‘future’), *fiets* (‘cycling’), *product* (‘product’), and *revolutie* (‘revolution’). These collocates highlight the extent to which *groen* functions as a marker of environmentally sustainable practices across both technical and social contexts. For example, metaphorical use is clearly illustrated in the noun phrase *groen gas* (‘green gas’), referring to a type of gas produced from renewable sources rather than fossil fuels:

(4) *Hiermee kunnen de **groen gas** hubs sneller investeren in onderzoek en ontwikkeling van hun plannen.*
‘This will enable **green gas** hubs to invest more quickly in research and development of their plans.’

However, in contrast to English, the Dutch data reveals an unexpected pattern of divergence in the semantic extension of color terms related to environmental discourse. While *green* in English appears to be the default metaphorical marker of sustainability, the Dutch data provides clear evidence of *blauw* (being used with a similar environmental function. This is evident in the expression *blauwe diesel* (‘blue diesel’), a term denoting a type of eco-friendly diesel fuel with reduced carbon emissions. The following example illustrates this metonymic and, to some extent, metaphorical extension of *blauw*:

(5) *Er wordt vermeld dat met **blauwe diesel** 90% CO2 bespaard wordt.*
‘It is stated that 90% CO2 is saved with **blue diesel**.’

The use of *blauw* in Dutch environmental discourse reveals a significant cross-linguistic divergence in the semantic extension of color terms. While both English and Dutch extensively employ *green/groen* to denote eco-friendliness, the Dutch data additionally demonstrates the environmental use of *blauw*, suggesting a more flexible and diversified radial network of color extensions in Dutch, in contrast to the predominantly green-centered pattern observed in English.

Another metaphorical extension of *green* attested in both the English and Dutch data is its use in the fixed expression *green light/groene licht*, derived from the traffic light system, where green conventionally signals permission to proceed. In English data, the collocate *signal* also has an identical metaphorical meaning. In this metaphorical pattern, *green* no longer refers to environmental qualities, but instead functions as a symbol of approval, authorization, or the removal of obstacles. In the example below, *groen licht* (‘green light’) metaphorically frames the approval of a project as analogous to a green traffic signal, emphasizing the transition from a state of waiting or restriction to one of permitted action:

(6) *De Raad van State geeft **groen licht** voor de komst van een extra sneltrein op het traject Leeuwarden-Groningen.*
'The Council of State gives the **green light** for the arrival of an additional express train on the Leeuwarden-Groningen route.'

Another metaphorical extension shared by both English and Dutch is the expression *green thumb* in English and *groene vingers* ('green fingers') in Dutch, both referring to someone's natural talent or skill for gardening and plant care. In this metaphor, *green* symbolizes closeness to nature and the ability to nurture growth. This use is visible in the Dutch example:

(7) *Onze hoveniers hebben de kennis en de **groene vingers** om te adviseren en te ontzorgen.*
'Our gardeners have the knowledge and **green fingers** to advise and take care of everything.'

Here, *groene vingers* ('green fingers')metaphorically attributes gardening expertise and skill to the gardeners, mirroring the English *green thumb* both conceptually and functionally.

A single point of divergence between the metaphorical extensions of *green* in English and *groen* in Dutch was identified in the expression *green screen*. This metaphor appeared exclusively in the English data and did not have a Dutch equivalent. In this context, *green screen* refers to applications or software systems — particularly in the financial and technological sectors — that operate within older digital environments, often associated with fraud management or security systems. For example:

(8) *Informix Genero offers organizations with existing "**green screen**" 4GL applications a cost-effective means of modernizing those applications and protecting existing investments.*

Here, *green screen* functions as a metaphorical label for a particular type of application. Crucially, no comparable extension of *groen* was found in the Dutch data, making this expression the only metaphorical use of *green* in English without a direct parallel in Dutch.

5.2.2. Metonymic Semantic Extensions of *green/groen*

In both English and Dutch, one of the most frequent metonymic extensions of *green/groen* involves references to physical spaces, particularly natural landscapes or environmentally protected areas. In these cases, *green* stands metonymically for spaces characterized by vegetation, nature, or open views. For example:

(1) *Wayanad with its **green landscape**, is one of the most visited destinations in India.*

(10) *Langs de fiets- en wandelpaden ziet u prachtige oude eiken en overal in de wijk vindt u* ***groene zones****.*

‘Along the cycling and walking paths you will see beautiful old oaks and you will find **green areas** everywhere in the district.’

Another frequent metonymic pattern identified in both the English and Dutch data involves the use of *green/groen* to refer to physical objects or items that are literally green in color. In these cases, *green* does not signal environmental values or metaphorical qualities but simply functions as a descriptive label for color-coded items, which over time have become conventionalized within specific domains. This is displayed in the examples below:

(11) *Delays in obtaining a work visa or* ***green card*** *have also contributed to this process.*

(12) *We're expanding* ***green bin*** *or similar collection systems, developing a proposal to ban food waste from landfills, and supporting safe food donation.*

Overall, the metonymic extensions of *green* in English and *groen* in Dutch reveal a high degree of cross-linguistic overlap, with both languages predominantly employing the color term to refer to physical spaces characterized by vegetation and to color-coded objects, without any substantial divergences in usage.

5.3. *Black/zwart* Semantic Extensions

This section examines the metaphorical and metonymical extensions identified for *black* in English and *zwart* in Dutch, drawing on collocational patterns observed in word sketches and supported by concordance data.

5.3.1. Metaphorical Extensions of *black/zwart*

Across both English and Dutch, the metaphorical use of *black* and *zwart* is strongly associated with four core conceptual domains: illegality and secrecy, danger and negative evaluation, and marginalization or exclusion. These patterns were consistently attested in the data of both languages, confirming their deeply conventionalized status.

A metaphorical extension links *black*/*zwart* to illegality or secret financial activity. In English, this is most visible in expressions such as *black market*, while Dutch shows the widespread use of *zwart geld* (‘black money’), referring to undeclared income or illegal financial flows. This pattern is illustrated in the following Dutch example:

(13) *De afgelopen jaren is er voor gemiddeld 80 miljoen euro* ***zwart geld*** *per jaar opgespoord.*

‘In recent years, an average of 80 million euros of **black money** has been detected annually.’

A related metaphorical extension concerns danger, deviance, or negative evaluation, particularly in reference to people who violate social norms or expectations. Both English *black sheep* and Dutch *zwart schaap* (‘black sheep’) are conventional metaphors for the problematic or stigmatized member of a group. This pattern is exemplified in the English example:

(14) *However, she was also a druggie, the **black sheep** of the family.*

Another metaphorical pattern draws on the symbolic connection of *black/zwart* with danger, transgression, and malevolent forces. This semantic extension surfaces not only in negative characterizations of individuals — as in *black sheep* or *zwart schaap* — but also in references to supernatural or sinister phenomena, most strikingly in the expressions *black magic* and *zwarte magie*, where the color black evokes secrecy, fear, and the occult:

(15) *Vooral elektronica is voor de meesten **zwarte magie**, dat probéér je niet eens zelf te repareren.*

‘Electronics in particular are the most **black magic**, you don't even try to repair it yourself.’

Finally, *black/zwart* frequently signals marginalization or social exclusion through expressions like *black list* or *zwarte lijst*, denoting lists of banned or unwanted individuals. In Dutch, *zwarte lijst* is commonly used in administrative or institutional contexts, as in:

(16) *Voor toegangsregistratie (lijkt me niet in een disco) of om een **zwarte lijst** aan te kunnen leggen*.

‘For access registration (probably not in a club) or to be able to create a **blacklist**.’

Another instance of this metaphorical extension associated with taboo or marginalization is exemplified below, where a specific type of humor is characterized as *black*, indicating its focus on socially sensitive topics and its reliance on unconventional or potentially inappropriate perspectives:

(17) *He achieved his breakthrough with the **black comedy** "Women on the Verge of a Nervous Breakdown," followed by other successful films, among them "Julieta" (2016).*

All above-mentioned metaphorical extensions occur in both English and Dutch corpora. Considered collectively, these metaphorical patterns highlight a strong cross-linguistic parallelism in the conceptual associations of *black* and *zwart*, particularly their link to secrecy, deviance, and exclusion.

A point of divergence between English and Dutch emerges in the metaphorical extension of *zwart* to denote difficult situations, financial hardship, or looming disaster — a pattern that is not systematically attested in the English data. In Dutch, *zwart* is commonly used to frame periods of crisis, misfortune, or negative circumstances. This is particularly evident in idiomatic expressions such as *op zwart zaad zitten* ('to be broke', literally 'to sit on black seed'), which metaphorically describes financial deprivation, as illustrated in:

(18) *Fruitsector zit op **zwart zaad**.*

'The fruit sector is **struggling financially**.'

A similar mechanism underlies the use of *zwarte wolk* ('black cloud') to metaphorically represent impending doom or lingering misfortune, as seen in:

(19) *De **zwarte wolk** van het onheil is overgedreven...?*

'The **black cloud** of disaster has passed...?'

These expressions illustrate a uniquely Dutch tendency to extend *zwart* beyond secrecy or illegality into the domain of personal or collective hardship — a conceptual space where English typically employs other metaphorical resources (e.g., dark times, storm clouds) rather than the color black specifically.

In contrast to the Dutch-specific extension of *zwart* to financial hardship and misfortune, the English data reveals a metaphorical pattern absent from Dutch: the expression *black swan*. In English, *black swan* is a well-established metaphor referring to rare, unpredictable, and highly impactful events, particularly in economic or risk-related discourse:

(19) *Whether a **black swan** or a scapegoat, Covid-19 is an extraordinary event.*

Black swan functions as a metaphor for an extraordinary and unexpected occurrence that falls outside normal expectations. This metaphor does not appear in the Dutch data, suggesting that the *black swan* concept is culturally specific to English, or at least considerably less conventionalized in Dutch. Instead, Dutch appears to rely on alternative metaphorical framings for unexpected events, without the involvement of *zwart*.

Another culturally rooted extension is *zwarte weduwe* ('black widow'), referring both to a type of spider and, metonymically, to a woman who has lost her husband. While *zwarte weduwe* may function metonymically when referring to a literal widow, its use in figurative contexts — such as describing a

powerful or dangerous woman — clearly shifts into metaphor, invoking the characteristics of the black widow spider rather than merely its name:

(20) *Ik ben een soort **zwarte weduwe** en ben machtig.*

'I am a kind of **black widow** and I am powerful.'

5.3.2. Metonymic Extensions of *black/zwart*

In both English and Dutch, *black* and *zwart* are employed in metonymic extensions, where the color term designates a characteristic, material, or cultural association of the referent rather than its literal color. The data reveals both shared patterns and language-specific developments in this domain. A key cross-linguistic metonymy shared by both English and Dutch is the use of *black*/*zwart* to refer to a drink, most prominently *black coffee* and *zwarte koffie*, denoting coffee served without milk. Additionally, both languages employ *black community*/*zwarte gemeenschap* as an established expression referring to groups of people of color, where *black* functions as a socio-cultural label.

(20) *Het is een sterke **zwarte koffie** geserveerd in een smal glas.*

'It is a strong **black coffee** served in a narrow glass.'

(21) *There are an endless amount of links that can be drawn between the history of the **black community** and the history of the Irish.*

However, several metonymic extensions are exclusive to English. Expressions like *black tie* denote formal dress codes, while *black heart* is used to characterize emotional coldness or moral corruption. The phrase *black tooth* also occurs metonymically to describe a decayed or damaged tooth. These uses are absent from the Dutch data and appear to be conventionalized specifically within English.

Conversely, Dutch displays its own set of culturally embedded metonymic extensions of *zwart*. These include *zwarte cijfers* ('black numbers'), a financial expression indicating profit or financial health, in contrast to *rode cijfers* ('red numbers') for debt. Finally, *Zwarte Piet* ('Black Pete') represents a culturally specific figure from Dutch folklore, absent from English metaphorical or metonymic patterns.

5.4. Remaining Semantic Extensions

Given the considerable breadth and diversity of the data collected, and in light of the spatial constraints inherent to this chapter, the discussion that follows necessarily focuses on a selection of illustrative examples which are deemed most representative of the patterns and tendencies observed in the corpus. Additional examples, while equally insightful, are omitted from the main body of the analysis for reasons of brevity and clarity.

5.4.1. Semantic Extensions of *red/rood*

The analysis of *red* and *rood* revealed very limited metaphorical and metonymic productivity in both English and Dutch, especially when compared to *green/groen* and *black/zwart*. Most extensions are conventional and widely shared across both languages.

Although *red/rood* shows limited overall productivity compared to *green* and *black*, one consistent metaphorical extension in both English and Dutch involves the use of *red* to signify warning or danger. This is most notably realized in the conventionalized expression *red flag*, used metaphorically to signal a sign of risk or potential threat. For example:

(22) *Lowball prices are a **red flag**, says Iny, and APA investigations have discovered that a price too good to be true always comes with a story – a bad one.*

In addition to the conventional metaphor of *red* as danger or warning, the English data reveals further metaphorical extensions of *red* that are absent from the Dutch data. These uses are firmly established in English discourse but do not appear to have direct equivalents in Dutch.

One of the most prominent examples is *red tape*, a metaphor referring to excessive bureaucracy, administrative obstacles, or unnecessary regulations. In this case, *red* is not associated with danger but with restriction and inefficiency, likely originating from the literal red tape historically used to bind official documents. This use is illustrated in:

(23) *"But rules and **red tape** will confirm the suspicions of many that government is too big."*

Another culturally and politically specific metaphor is *red tide*, referring to the spread of communism. Here, *red* symbolically draws on its association with socialism and communism, especially in the context of Cold War rhetoric. The expression conceptualizes communism as an overwhelming, threatening force, akin to a rising tide. This use is demonstrated in:

(24) *"Butm, I remember that era and can assure you noone but a communist at that time could see the futility of resisting the* ***red tide****."*

Both expressions — *red tape* and *red tide* — reveal metaphorical developments of *red* that are deeply rooted in English-speaking cultural and political contexts, without any comparable usage patterns in Dutch.

In contrast to the English-specific metaphorical uses of red, the Dutch data reveals several culturally entrenched extensions of rood that are not attested in English. One of the most prominent examples is *rode cijfers* ('red numbers'), a financial metaphor referring to debt, loss, or negative performance, particularly in accounting or educational contexts. This usage is illustrated in the following example:

(25) *Onze kinderen met wat teveel* ***rode cijfers*** *komen in een crisissituatie waar juist een goed huiswerkbeleid als vangnet moet functioneren.*

'Our children with a few too many **red numbers** end up in a crisis situation where a good homework policy should function as a safety net.'

Another metaphorical extension unique to Dutch is *rode lap* ('red cloth'), which refers to a provocation that triggers anger or irritation, echoing the image of a bull reacting to a red cloth. This is shown in:

(26) *Normaal gesproken werkt de pesterige toon van Maalderink als een* ***rode lap*** *op een oranje stier.*

'Normally, Maalderink's teasing tone works like a **red cloth** on an orange bull.'

Finally, *rode diesel* ('red diesel') serves as a marked contrast to *groene diesel* ('green diesel') and *blauwe diesel* ('blue diesel') in environmental discourse. In this context, *rode diesel* functions as the environmentally unfriendly, traditional fuel type, as shown in:

(27) *Milieubewuste watersporters die hun schepen uitrusten met hybride aandrijving moeten bij het tanken van* ***rode diesel*** *bijzonder oplettend zijn.*

'Environmentally conscious water sports enthusiasts equipping their boats with hybrid propulsion need to be particularly careful when refueling with **red diesel**.'

These uses of *rood* highlight the color's capacity in Dutch to symbolically mark financial danger, provocation, and environmentally undesirable choices — a set of metaphorical extensions largely absent from English samples.

While metaphorical extensions of *red/rood* in both English and Dutch are relatively limited, several conventionalized metonymic patterns are identifiable, particularly in references to physical items and cultural practices associated with the color red. These extensions rely not on conceptual similarity but on established associations between the color term and the referent.

In English, expressions such as *red carpet* illustrate the use of *red* to evoke prestige and ceremonial treatment, as in the example below, where *red* denotes the literal color of the object, which has become culturally associated with celebrity status and public honor.:

> (28) *They got the chance to walk the **red carpet**, smile for the paparazzi, picked up different acting awards and relaxed after at a reception in the school.*

In Dutch, similar metonymic extensions occur, though they are rooted in different contexts. Examples such as *rode verkeerslicht* ('red traffic light') illustrate the literal, color-based reference that has become a shorthand for the act of stopping while driving:

> (29) *De zeven leerlingen die zijn gezakt zijn niet gestopt voor het **rode verkeerslicht**.*
>
> 'The seven students who failed did not stop for the **red traffic light**.'

5.4.2. Semantic Extensions of *blue/blauw*

While *blue/blauw* shows comparatively lower metaphorical productivity than *green/groen* or *black/zwart*, both English and Dutch data reveal several entrenched metaphorical extensions, particularly related to social status, elitism, or marked days and substances.

In English, *blue* participates in several metaphorical constructions, many of which are firmly lexicalised. The expression *blue blood* (30) signifies aristocratic lineage, while *blue collar* (31) denotes working-class identity — both conventional metaphorical extensions grounded in sociocultural associations of colour. Similarly, *blue chip* (32) refers to high-value stocks or reliable assets in finance.

> (30) *We speak of aristocrats as "**blue bloods**," but the ancients would point to the same thing by noting how a person was born of the best families of the land.*

(31) *My father proudly held himself out to be a* ***blue collar****, unionized working class man but we were solidly in the middle class.*

(32) *It demonstrates our ability to deliver the best results for* ***blue chip*** *private equity clients through competitive global auction processes, thoughtful positioning and understanding the investor universe.*

Another productive metaphor involves *blue screen*, often referring to technology failures (as in *blue screen of death* in computing). Other metaphorical uses like *blue note* or *blue print* evoke stylistic, creative, or technical domains.

In the Dutch data, *blauw* also participates in metaphorical extensions, though within somewhat different domains. Expressions such as *blauw bloed* ('blue blood') parallel the English metaphor of aristocracy. However, Dutch shows more culturally specific uses, such as *blauwe maandag* ('blue Monday') (33), referring to something very short-lived or fleeting, or *blauwe diesel*, already discussed in relation to environmental discourse, which denotes a more sustainable type of fuel. Another notable example is *blauwe waterstof* ('blue hydrogen'), which, like *groen*/*green*, anchors *blauw* firmly within ecological and technological discourse.

(33) *Dat beroep is er nooit van gekomen, hoewel hij op een* ***blauwe maandag*** *wel in een bestelbusje heeft gereden.*

'That profession never came to fruition, although he did drive a van on a **blue Monday**.'

Overall, both languages share the metaphor of *blue blood* in the context of aristocracy, but beyond this, the metaphorical networks of *blue/blauw* diverge considerably. English *blue* is strongly associated with social stratification and technological jargon, while Dutch *blauw* extends metaphorically into environmental and temporal domains. The ecological use of *blauwe diesel* ('blue diesel') and *blauwe waterstof* ('blue hydrogen') in Dutch has no systematic equivalent in English, displaying difference in the conceptual structuring of *blue/blauw* across the two languages.

Metonymic uses of *blue/blauw* in both English and Dutch predominantly rely on color-based references to culturally salient objects or symbols. These include *blue cheese*, a type of mold cheese (34) in both language data or *blauwe planeet* ('blue planet') for Earth (35). In English, *blue plaque*, commemorating historically significant locations (36), or *blue state*, referring to a U.S. state that votes for the Democratic Party (37). In Dutch, *blauwe envelop* ('blue envelope') symbolizing official tax correspondence (38):

(34) *Rich, sweet, figgy, nutty with a touch of candied peel and even incense, it's sublime with* ***blue cheese*** *and walnuts, even with plum pudding.*

(35) *U, Heer Jezus, bukte Zich neerbuigend Ontfermend Over een* ***blauwe planeet***

'You, Lord Jesus, stooped down in compassion over a **blue planet**'

(36) *A* ***blue plaque*** *was installed on the building to commemorate his achievements in highlighting the role that GPs play in the health of the community.*

(37) *Red and* ***blue states*** *ensure that locale magnifies differences that were mostly manageable during the administrations of Ford, Carter, Reagan, the Bushes, and Clinton.*

(38) *De bekende* ***blauwe envelop*** *betekent vaak dat je moet betalen.*

'The familiar **blue envelope** often means that you have to pay.'

These patterns confirm the conventional and largely literal metonymic use of *blue/blauw*, grounded in easily recognizable visual associations, with limited cross-linguistic divergence.

5.4.3. Semantic Extensions of *white/wit*

In the English data, the metaphorical use of *white* primarily revolves around conceptualizations of innocence, harmlessness, and social advantage. One of the most entrenched examples is *white lie*, referring to a small, supposedly harmless falsehood often told to avoid hurting someone's feelings or to prevent conflict (39). The metaphor draws on conventional associations between the color white and moral purity or harmlessness:

(39) *He continues, 'I'm not talking about the occasional* ***white lie*** *to maybe avoid a fight or to avoid hurting someone's feelings.*

Another metaphorical extension is *white privilege* (40), denoting systemic societal advantages experienced by white individuals. Here, *white* extends beyond its literal reference to skin color, operating as a conceptual shorthand for social dominance and unearned benefit within racialized hierarchies:

(40) *She examines how* ***white privilege*** *works to disadvantage those from BME backgrounds and will explore how universities can develop good practice for the inclusion of BME groups in higher education.*

In contrast, metaphorical uses of *wit* in the Dutch data are markedly limited. The only salient example uncovered involves *wit doek* (‘white screen’), referring metonymically and metaphorically to cinema or the film industry. This phrase reflects the projection of moving images onto a literal white screen, yet its usage has become conventionalized to evoke the world of film itself:

(41) *Of Dutt de komende zes jaar nog op het **witte doek** te zien zal zijn wordt aan het einde van de dag bekend gemaakt.*

‘Whether Dutt will be seen on the **big screen** for the next six years will be announced at the end of the day.’

Metonymic uses of *white/wit* in both English and Dutch primarily rely on culturally entrenched associations, where the adjective serves as a symbolic reference rather than a literal color description.

In English, key patterns include *white supremacy* (42), referring to racial ideology, and *white collar* (43), designating professional or administrative work. Other conventional extensions include *white flag* (44) for surrender and *white hair* (45) as an indicator of old age:

(42) *The dismantling of **white supremacy** is not just white people continually talking about the dismantling of white supremacy.*

(43) *BJ Trach, a member of the firm's Executive Committee, represents institutional and individual clients in their most complex criminal and civil litigation, including **white collar matters**, government investigations, and complex commercial litigation.*

(44) *In 1991, Secretary of State James Baker famously waved a **white flag** "in submission" after almost ten hours because he needed a bathroom break.*

(45) *It isn't hard to turn back the clock and imagine him 64 years ago, his **white hair** a darker shade, his skin wrinkle-free, his compact frame darting around the edge of a soccer field chasing down errant balls.*

Dutch data mirrors some of these patterns, with *het Witte Huis* (‘White House’) (46) referring to the American presidential residence and *witte boorden baan* (‘white-collar job’) indicating non-manual employment. Additionally, *witte baard* (‘white beard’) and *witte haren* (‘white hairs’) (47) typically evoke stereotypical images of age or authority.

(47) *Het project groeit dan ook gestaag en wordt sinds vorig jaar zelfs gebruikt voor de officiële site van het Amerikaanse* ***Witte Huis*** .

‘The project is growing steadily and has even been used for the official website of the American **White House** since last year.’

(47) *We zien in de linker bovenhoek God de Vader voorgesteld als een bejaarde man met* ***witte baard en haren***.

‘In the upper left corner we see God the Father depicted as an elderly man with a **white beard and hair**.’

The observed metonymic extensions of *white* and *wit* demonstrate strong structural and conceptual parallels between English and Dutch, reflecting shared cultural conventions and formulaic patterns of usage.

5.5. Implications

Although this study offers a thorough and focused analysis, it is important to acknowledge several methodological limitations, especially in relation to data selection and corpus tools. One relatively minor constraint involves the restriction on the number of color terms included in the analysis. The deliberate focus on five specific colors — green/groen, black/zwart, red/rood, blue/blauw, and white/wit — provided a theoretically grounded and manageable dataset. However, this scope necessarily excluded other potentially rich color terms, including culturally salient or peripheral ones. Broadening the range of color terms in future studies could provide deeper insight into the full spectrum of metaphorical and metonymic extensions tied to color. Similarly, incorporating languages beyond English and Dutch would enable more robust cross-linguistic comparisons and clarify which patterns are universal and which are language-specific.

A further limitation lies in the decision to analyze only 50 concordance lines per collocate when assessing metaphorical or metonymic usage. While this sample size was chosen to balance comprehensiveness and practical feasibility, it remains likely that additional or subtler semantic extensions could have emerged from a larger or more varied sample. This is especially pertinent where semantic shifts are nuanced, infrequent, or heavily context-dependent. Future research may benefit from employing more fine-grained or iterative sampling strategies to better capture such meanings.

Another methodological issue arises from the design of Sketch Engine itself. In its Word Sketch tool, only the top 100 collocates for a given node word can be exported. While this limitation helps keep data

manageable and prioritizes statistically strong associations, it inevitably omits lower-frequency collocates that may still be semantically significant. Given that metaphor and metonymy often function at the edges of conventional language use, future studies might address this by either increasing the number of extractable collocates (if technically feasible) or supplementing quantitative extraction with more manual or qualitative data selection methods.

The most substantial limitation relates to the statistical measure employed to identify collocational strength — namely, the use of logDice. While logDice is a reliable and balanced measure for ranking frequent collocates, its use as the sole association metric in this study may have hindered the identification of rare yet semantically valuable collocations. Since metaphor and metonymy often emerge in such less frequent contexts, future research could benefit from incorporating Mutual Information (MI) scores, which better highlight such associations (Zakharov 2017). Combining multiple association measures might offer a more nuanced and complete picture of collocational behavior, particularly in semantic research focused on figurative language.

In sum, while these limitations define the boundaries of the present analysis, they also suggest several productive directions for future work. This study offers an initial mapping of color-based metaphor and metonymy in English and Dutch, but further research is essential to fully capture the intricacies, variability, and cultural dimensions of figurative color semantics.

6. Conclusion

This thesis has examined the semantic extension of five basic color adjectives—*black/zwart, white/wit, red/rood, blue/blauw,* and *green/groen*—in English and Dutch, with a focus on their metaphorical and metonymical uses. Drawing on data extracted from large-scale web corpora via Sketch Engine's Word Sketch tool, the analysis explored how color terms extend beyond their literal meanings to encode complex, culturally embedded concepts. These extensions were investigated within two syntactic environments: attributive (adjective + noun) and predicative (be + adjective) constructions. By analyzing the most strongly associated collocates (ranked by logDice), the study identified a total of 195 extended uses across both languages and mapped them onto cognitive semantic mechanisms.

The findings show that metaphorical extensions were most frequent in attributive noun modification, especially for *green/groen* and *black/zwart,* while metonymical uses were more evenly distributed across syntactic contexts. English and Dutch displayed a high degree of parallelism in some areas, such as the environmental metaphor of *green/groen* and the illegality metaphor of *black/zwart,* but diverged in others.

Notably, Dutch extended *blauw* metaphorically into environmental domains—e.g., *blauwe diesel*—where English continued to rely on *green*, reflecting language-specific radial structures. Similarly, Dutch displayed a broader range of metonymic predicative uses (especially with *groen* and *rood*), which may point to greater syntactic flexibility or culturally specific discourse conventions.

These patterns support core principles from cognitive linguistics, particularly the theory of radial categories and the interaction of metaphor and metonymy as key mechanisms of semantic extension, as outlined in the introduction and developed throughout the literature review. The corpus data demonstrate that color terms function as central lexical nodes from which figurative and context-sensitive meanings radiate, reflecting structured polysemy rather than random proliferation. As entrenched, high-frequency items, color adjectives are both cognitively salient and semantically versatile, making them especially susceptible to metaphorical and metonymical reinterpretation. This observation aligns with Harmon and Kapatsinski's (2017) claim that frequent forms are both more accessible in production and more semantically stable in comprehension, explaining the dynamic yet patterned behavior of terms like *green/groen* and *black/zwart*. Moreover, the cross-linguistic divergences—such as the environmental use of *blauw* in Dutch but not in English—support Kalda and Uusküla's (2019) argument that figurative extensions are culturally mediated and contextually bound. Philip's (2003) corpus-based findings are also echoed in the current study, particularly in the way that repeated collocational patterns and syntactic preferences reinforce and constrain the development of extended meanings. The clear predominance of metaphorical extensions in attributive (noun-modifying) positions further supports the view that syntactic context plays a non-trivial role in shaping semantic behavior. Overall, the findings affirm the position advanced in the literature that conceptual mechanisms, usage frequency, and cultural framing jointly influence how basic lexical items like color terms develop rich, language-specific semantic networks.

In light of these findings and constraints, several avenues for future research emerge. Future studies could expand the scope to include more color terms or examine related forms (e.g., *greening*, *whiteness*, or *zwartrijden*). Incorporating spoken corpora, genre-specific subcorpora, or even experimental methods could provide complementary perspectives on how these extensions are processed and understood by speakers. Additionally, expanding the cross-linguistic comparison to include typologically more distant languages could help disentangle universal patterns from culture-bound variation.

Rather than offering a definitive map of color term semantics, this thesis provides a snapshot of meaning in motion—how basic words with concrete origins become vehicles for abstract, social, and evaluative meanings. It demonstrates that the semantic lives of color terms are shaped not only by

conceptual mechanisms but also by linguistic structure, usage patterns, and cultural environments. In doing so, it contributes to a broader understanding of polysemy, cross-linguistic variation, and the cognitive underpinnings of lexical meaning.

7. Summary in Lithuanian

Šiame magistriniame darbe nagrinėjami penkių pagrindinių spalvų būdvardžių – *black/zwart, white/wit, red/rood, blue/blauw* ir *green/groen* – semantiniai išsiskyrimai ir reikšmės plėtiniai anglų ir olandų kalbose. Tyrimas grindžiamas kognityvinės lingvistikos teoriniu pagrindu ir remiasi leksinės semantikos principais, siekiant išanalizuoti, kaip spalvų terminai metaforiškai ir metonimiškai plečiasi šiose dviejose kalbose, atskleidžiant tiek bendrus, tiek kalbai specifinius spalvų konceptualizacijos modelius.

Empirinė analizė atlikta naudojant dvi didelės apimties internetines korpuso duomenų bazes, prieinamas per „Sketch Engine“: anglų kalbos korpusą *English Web 2021* (*enTenTen21,* apie 52,3 mlrd. žodžių) ir olandų kalbos korpusą *Dutch Web 2020* (*nlTenTen20*, apie 5,9 mlrd. žodžių). Kolokacinis elgesys buvo tiriamas dviejuose sintaksiniuose kontekstuose – būdvardžio ir daiktavardžio junginiuose bei predikatiniuose sakiniuose (*be* + *adjective*) – kurie buvo parinkti dėl savo produktyvumo semantinio reikšmingumo atskleidime. Kiekvienam spalvų terminui buvo automatiškai išskirti 100 aukščiausio *logDice* balo kolokatų, o po to atsitiktinai atrinkta po 50 konkordancijos pavyzdžių kiekvienam kolokatui, kuriuos rankiniu būdu analizavus buvo nustatyti pažodiniai, metoniminiai arba metaforiniai reikšmės plėtiniai.

Rezultatai rodo, kad tiek anglų, tiek olandų kalbų spalvų terminai pasižymi sistemingu semantinių plėtinių pasiskirstymu, tačiau anglų kalboje būdvardžiai dažniau įgyja abstrakčias ir metaforines reikšmes, ypač emociniuose ar vertinamuosiuose kontekstuose (pvz., *blue mood, black humor*), o olandų kalba labiau linkusi į konkrečius, metonimiškai pagrįstus vartojimus. Šie duomenys suteikia išsamesnį supratimą apie spalvų sąvokų polisemiją ir prisideda prie mūsų žinojimo apie tai, kaip artimos kalbos semantiškai struktūruoja reikšmę radialinių tinklų principu.

Remiantis gautais rezultatais ir pripažintais apribojimais, ateities tyrimai galėtų išplėsti šios temos apimtį įtraukiant daugiau spalvų terminų, išvestinių formų (pvz., *greening, whiteness, zwartrijden*), taip pat pasitelkiant sakytinės kalbos ar žanrui būdingus korpusus bei eksperimentinius metodus, siekiant išsiaiškinti, kaip šie reikšmės plėtiniai yra suvokiami kalbos vartojimo metu. Lyginamoji analizė, apimanti tipologiškai skirtingas kalbas, leistų geriau atskirti universalius semantinius dėsningumus nuo kultūriškai sąlygotų variacijų. Šis darbas nepateikia galutinio spalvų terminų semantinio žemėlapio, bet siūlo momentinį žvilgsnį į reikšmės kaitą – kaip konkrečią reikšmę turintys žodžiai tampa abstrakčių, socialinių

ir vertinamųjų reikšmių nešėjais. Tyrimas parodo, kad spalvų terminų semantinė raida yra formuojama ne tik konceptualiais mechanizmais, bet ir kalbos struktūra, vartosenos dažniu bei kultūrine aplinka, taip prisidedant prie platesnio polisemijos ir leksinės reikšmės kognityvinių pagrindų supratimo.

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9. Appendices

Appendix 1. Metaphorical and metonymic extensions of collocates of *green*

All collocates are color coded as follows:

Metaphorical extension – green

Metonymic extension – yellow

nouns modified by X	Collocate	Frequency	Score	Example
	light	118620	8.95	Power steering fluid given the **green light** along with the rest of the items on the inspection form.
	energy	32278	7.23	**Green energy** and electric transportation systems have pushed explosive growth in inverter markets.
	infrastructure	20471	6.92	New Democrats are ready to make a real difference in communities and that starts with things like investments in affordable housing, public transit, and **green infrastructure** .
	economy	23923	6.89	The **green economy** can make a significant contribution to Ireland's economy by creating employment and export opportunities in areas such as renewable energy, energy efficiency and consultancy, waste management, recovery and recycling, and water and wastewater treatment - all of which can be undertaken by chemical engineers.
	hydrogen	11382	6.7	The global energy industry is looking to **green hydrogen** , a carbonless fuel generated with renewable energy, as essential on the road to decarbonization and climate neutrality.
	flag	14954	6.68	There is an unedifying scrabble by every politician in the state to wrap the **green flag** around themselves and stake their claim to be the inheritors of the tradition.
	bond	13186	6.52	For example, **green bonds** , an environmental community loan fund, or municipal bonds focused on sustainable cities or the transition from traditional to renewable energies may offer a modest return in exchange for relatively low risk.
	thumb	10066	6.52	Either way, for those who lack the **green thumb** this garden makes for pretty failsafe results.
	screen	16801	6.46	Informix Genero offers organizations with existing " **green screen** " 4GL applications a cost-effective means of modernizing those applications and protecting existing investments.
	belt	11430	6.44	The English green belt study used all kinds of language to soften the blow because **green belts** are popular.
	building	25918	6.41	These two cities showcase strong building efficiency and performance, which showed that both local and international certification standards continue to yield high-performance on **green buildings** .
	shoot	9490	6.32	It will choke the **green shoots** of economic recovery that have emerged, and take us back from spring to winter.

	revolution	9535	6.09	The widely accepted "success" of India's **green revolution** in making the country self-sufficient in foodgrains has made it the model for all agrarian futures envisioned in the country.
	technology	24988	6.05	The course will help develop government policy and economic recovery by producing top quality graduates who can contribute to a smart economy and hasten implementation of **green technologies** .
	job	19113	6.04	And the benefits are clear as well, such as **green jobs** , clean air and sounder economies.
	initiative	11784	5.92	We're here to provide you with support for **green initiatives** , affordable housing, women in government, climate protection, partnerships involving First Nations communities and more.
	credential	6003	5.66	**Green credentials** are fast becoming not just an opportunity for organisations to differentiate themselves but an expectation.
	recovery	6296	5.48	For example – Canada has tied corporate coronavirus relief to climate action as a part of a global push for a **green recovery** .
	chemistry	5624	5.48	Our research focuses on synthetic organometallic & coordination chemistry, catalysis and **green chemistry** .
	future	6714	5.38	Leading the adoption of hydrogen technologies at scale for decades, we understand the revolutionary capabilities of hydrogen to reduce carbon emissions and pave the way for a **greener future** .
	growth	10330	5.33	Boris Johnson insists that "a global recovery from the pandemic must be rooted in **green growth** ".
	electricity	4594	5.31	In addition, **green electricity** must be available at good economic conditions.
	transition	5260	5.29	The fund focuses on reforms and investments to make the European economy fit for the 21st century, including the digital and the **green transition** .
	paper	8719	5.27	There is a new **green paper** on social security and labour flexibility that tries to address, of course from the bosses side, these problems.
	fee	8298	5.25	The 20/30 refers to the extremely low **green fees** for members to play at participating courses.
	finance	4541	5.18	We will also explore active collaboration with city governments through public-private initiatives and analyze the latest ideas in **green finance** and sustainable developments to make resilient cities.
	card	39087	7.01	Delays in obtaining a work visa or **green card** have also contributed to this process.
				Fairgoers could take photos using bicentennial-themed props and custom **green screens** at the TapSnap booth.
	arrow	9691	6.39	How long has **green arrow** has been a superhero?
	line	25825	5.67	No doubt when DART completes the orange and **green lines** , it will claim they were completed on time and on budget.
	lantern	5303	5.56	**Green Lanterns** are often depicted as noble, stalwart individuals.
	waste	6445	5.53	Encourage development of a community **green waste** and compost facility.
	bin	5528	5.51	We're expanding **green bin** or similar collection systems, developing a proposal to ban food waste from landfills, and supporting safe food donation.
	earth	5264	5.44	Who on God's **green Earth** is Edmund Tsabard?

	zone	7836	5.4	Vancouver's housing prices are high because of the **green zone** and other land-use regulation.
	house	10305	5.26	When I was fifteen I started working in a **green house** with indoor flowering plants, like lilies and poinsettias, just as a part time job.
	landscape	5906	5.24	Wayanad with its **green landscape** , is one of the most visited destinations in India.
	area	26830	5.18	I also wanted to ask you if you have considered the creation of **green areas** and parks along the promenade/cycleway using apropriate spoil material.
subjects of "be X"	Collocate	Frequency	Score	Example
	city	652	5.79	This includes plans to make **cities greener** , which we know are responsible for 70 per cent of global emissions.
	planet	244	5.51	We make the **planet greener** by improving global energy efficiency.
	signal	259	5.39	In other words, when the **signal** is **green** for a specific movement (straight through, left turn, etc.), that's a signal phase.
	building	366	5.23	"It was very important to UNB Saint John that the new **building** be **green** ."
	thumb	142	5.18	The book also contains actionable information for those whose **thumbs** are no **greener** than the money they use to buy their food.
	home	409	5.13	"It also makes our **home greener** ," she said with smile.
	village	556	6.68	Village officials have advised people planning to attend concerts on the **village green** to wear masks and practice social distancing.
	bowling	220	5.83	Looking after a **bowling green** as I do takes a lot of time, effort and money.
	landscape	288	5.82	And the **landscapes** are not **green** yet... its a dull weather.
	countryside	183	5.52	The Georgian **countryside** is very **green** and largely unspoilt, with 70% covered in forests.
	land	398	5.48	Along the coast, known as the Garden Route and a very popular tourist destination, the **land** is **greener** and reminds me of Costa Rica, or of southern Oregon.
	island	256	5.48	Most of the **island** is **green** and lush, planted with coffee, banana, corn and other crops.
	earth	267	5.43	Carbon dioxide emissions are making the **Earth greener** and more fertile, a United Nations (UN) climate scientist has said.
	money	336	5.06	If I'm making a pizza for my own family, I probably wouldn't put pineapple on it, but if someone's willing to buy it, their **money** 's just as **green** as everyone else's.
	bowl	127	4.86	There are soccer pitches, a recently constructed **bowls green** and a circulatory pedestrian path system.

Appendix 2. Metaphorical and metonymic extensions of collocates of *groen*

All collocates are color coded as follows:

Metaphorical extension – green

Metonymic extension – yellow

nouns modified by X	Collocate	Frequency	Score	Example
	stroom	17188	9.57	Zij produceren zelf circa 6000 kilowattuur **groene stroom** per jaar.
	licht	16404	9.26	De Raad van State geeft **groen licht** voor de komst van een extra sneltrein op het traject Leeuwarden-Groningen.
	energie	9955	8.38	Greenpeace wil dat Hollande zich inzet voor **groene energie** in plaats van 'energie uit het verleden'.
	gas	7050	8.32	Hiermee kunnen de **groen gas** hubs sneller investeren in onderzoek en ontwikkeling van hun plannen.
	vinger	5112	7.95	Onze hoveniers hebben de kennis en de **groene vingers** om te adviseren en te ontzorgen.
	waterstof	1891	6.58	In het productieproces wordt gebruik gemaakt van **groene waterstof** .
	long	1919	6.57	Hohe Mark wat ten noorden van het ruhrgebied ligt, is ook wel bekend als de **groene long** .
	economie	1830	6.21	In de nieuwe **groene economie** liggen de banen voor het oprapen.
	stad	2733	6.16	Hij heeft op deze hoogte ook oog voor Weert als **groene stad** en hij vertelt hier over het klooster van de Brigittanessen.
	onderwijs	1622	5.73	Een feestmiddag over de toekomstpotentie van **groen onderwijs** en werken in het groen.
	revolutie	919	5.38	Een typisch voorbeeld: in India heeft de **groene revolutie** , overal waar zij plaatsvond, de prijzen vier tot zes keer zo hoog gemaakt wat weer leidde tot landspekulatie en zelfs landroof.
	omgeving	13116	8.52	Tignale heeft een prachtige **groene omgeving** waar u mooie wandelingen kunt maken.
	kaart	4245	7.22	Neem altijd uw **groene kaart** /pasje mee.
	zeep	3039	7.22	Als je pannen inzeept met **groene zeep** , voorkomt dit het snelle zwart worden van je pannen.
	ruimte	4671	6.98	Groen Links is in de stad Groningen helaas medeverantwoordelijk voor het verdwijnen van **groene ruimte** en het ophokken van stadsbewoners
	landschap	3163	6.94	Geniet van de frisse lucht en ontdek het bijzonder **groene landschap** !
	tuin	3258	6.91	Midden in de zomer te vinden in struwelen en **groene tuinen** .
	zone	2016	6.51	Toch wil men een **groene zone** tussen beide steden behouden.
	gebied	3300	6.41	Al die mooie **groene gebieden** in de Randstad zijn in zekere zin ook een probleem.
	veld	1724	6.19	Het **groene veld** wordt opgefleurd door gele bloemetjes.
	wijk	1672	6.14	Straks verschijnt er een mooie **groene wijk** met een prachtig gebouw op een centrale plek."
	specht	1392	6.14	Een ideaal biotoop voor heel wat vogels zoals; roodborstje, tjif-tjaf, winterkoning, fitis, merel, **groene specht** , wielewaal, zanglijster en zwartkop.
	route	1163	5.48	Het is een tamelijk **groene route** , best leuk voor een stratenloop.
	camping	993	5.45	De kleine **groene camping** is eenvoudig en heeft geen bingo, ballenbad of zwembad.

	leefomgeving	823	5.31	Een **groene leefomgeving** levert Nederland meer dan 1 miljard economische winst op.
subjects of "be X"	Collocate	Frequency	Score	Example
	stroom	59	7.94	De concurrenten geven ervaringen als voorbeeld, ze stappen in op bewuste keuzes bijvoorbeeld dat hun **stroom groen** is.
	toekomst	38	7.16	De **toekomst** is altijd **groener** , er ligt altijd iets beters in het verschiet.
	energie	21	6.19	Als alle **energie groen** is, als alle wasmiddelen nog witter wassen, als je overal het nieuwe model smartphone krijgt bij het goedkoopste telefoonabonnement, wat kies je dan?
	gas	13	5.76	**Gas** is **groener** dan je denkt!
	lucht	15	5.55	Je ontkent dat je een gele bril op hebt en je bent ervan overtuigd dat de **lucht groen** is.
	fiets	12	5.16	Omstandigheden zijn verschillend dus kun je niet zomaar zeggen dat een gewone **fiets** altijd **groener** is.
	product	10	3.25	Uitgevende instanties betalen extra kosten om te laten bewijzen dat hun **product** echt **groen** is.
	omgeving	142	8.02	De **omgeving is groen** en bosrijk, het centrum ligt op fietsafstand.
	landschap	87	8	Het **landschap is groener** en de helderblauwe zee is altijd zichtbaar!
	wijk	45	7.43	Deze **wijk** is erg **groen** met een hoop mooie tuinen.
	tuin	43	6.68	De **tuin** is **groen** en weelderig.
	camping	35	6.68	De **camping** is **groen** en beschikt over een mooi zwembad met glijbanen en een apart kinderbad.
	gebied	39	6.37	Het **gebied** is **groen** en ruim 400 ha groot en beslaat een kwart van Vlaardingen.
	land	33	6.11	Het **land** is **groen** en fantastisch mooi, de bevolking veel relaxter.
	achterland	14	6.05	Het is een perfecte plaats voor een luxe strandvakantie, autohuur raad ik af, het **achterland** is **groen** , bezienswaardigheden zijn beperkt.
	stad	29	5.94	Luxemburg **stad** is **groen** , is mooi en een echte aanrader!
	wereld	12	4.69	De **wereld** is **groen** , en je kunt die nog groener maken.
	route	9	4.63	De **routes** zijn **groener** , stiller en sociaal veiliger dan de fietspaden langs drukke wegen.

Appendix 3. Metaphorical and metonymic extensions of collocates of *black*

All collocates are color coded as follows:

Metaphorical extension – green

Metonymic extension – yellow

nouns modified by X	Collocate	Frequency	Score	Example
	box	66101	7.76	In the wake of a Tesla car's fatal crash while on autopilot, German lawmakers are proposing mandatory " **black boxes** " for self-driving cars, similar to the devices in airplanes that record the moments before a fatal accident.
	eye	49494	7.54	The boycott's success was a **black eye** for the Kennedy administration.
	magic	23914	7.04	The option has to be exercised, either for rationality or for **black magic** .
	market	55650	6.81	A total of 584 antiquities were recovered, estimated to be worth around €2m and intended for sale on the **black market** .
	comedy	14554	6.24	He achieved his breakthrough with the **black comedy** "Women on the Verge of a Nervous Breakdown," followed by other successful films, among them "Julieta" (2016).
	sheep	13303	6.23	However, she was also a druggie, the **black sheep** of the family.
	swan	9357	5.75	Whether a **black swan** or a scapegoat, Covid-19 is an extraordinary event.
	money	11640	5.35	The permitting of massive **black money** in our elections was taken advantage of by the Russian Federation, which, having hopelessly corrupted its own presidential elections, managed to further corrupt the American ones, as well.
	community	56030	6.85	There are an endless amount of links that can be drawn between the history of the **black community** and the history of the Irish.
	coffee	12039	5.98	From now on, I will live on cigarettes and **black coffee** .
	tie	10188	5.67	Jeans or **black tie** ?
subjects of "be X"	Collocate	Frequency	Score	Example
	heart	521	5.58	They can't see that my **heart** is **black** as midnight, rotten as a poisoned apple.
	hand	630	5.4	I had neither coat, waistcoat, collar, nor hat, my trousers were badly torn, and my face and **hands** were **black** with the explosion.
	tooth	320	5.23	Can the color of a **tooth** be **black** without decay?

Appendix 4. Metaphorical and metonymic extensions of collocates of *zwart*

All collocates are color coded as follows:

Metaphorical extension – green

Metonymic extension – yellow

nouns modified by X	Collocate	Frequency	Score	Example
	gat	21518	9.85	In hem komen alle slechte eigenschappen van politiemensen bijeen en trekken samen tot een groot **zwart gat** dat met vrees wordt bekeken door de meeste van zijn collega's.
	lijst	9994	8.65	Voor toegangsregistratie (lijkt me niet in een disco) of om een **zwarte lijst** aan te kunnen leggen.
	doos	3438	7.23	Is er een **zwarte doos** in dat kleine brein waar dat allemaal geregistreerd staat?

	markt	4215	7.04	Als je helemaal geen fabriek meer hebt, kun je op de **zwarte markt** nog spaarzaam aan eenheden komen.
	schaap	2608	6.94	Het **zwarte schaap** is al gauw de meerkeuzevraag, en de ideale wereld is bevolkt door portfolio's en authentieke toetsen.
	magie	2361	6.85	Vooral elektronica is voor de meesten **zwarte magie** , dat probéér je niet eens zelf te repareren.
	geld	3286	6.68	De afgelopen jaren is er voor gemiddeld 80 miljoen euro **zwart geld** per jaar opgespoord.
	goud	1755	6.32	De gemeente ziet in de uitwerpselen van de eigen inwoners het nieuwe **zwarte goud** .
	bladzijde	1626	6.3	Een eenvoudig houten kruis markeert een **zwarte bladzijde** uit de geschiedenis van het landgoed.
	humor	1671	6.27	De **zwarte humor** , de bizarre situaties, de bijzondere karakters, geweldig.
	zaad	1486	6.1	Fruitsector zit op **zwart zaad**
	kraai	1395	6.1	De boer ontdekt een **zwarte kraai** boven in de schuur, die dit kwaad zou veroorzaken.
	dood	1485	5.93	De pest, de ' **Zwarte Dood** ', wordt vaak in verbinding gebracht met de middeleeuwen.
	wolk	962	5.51	De **zwarte wolk** van het onheil is overgedreven...?
	Piet	8048	8.58	**Zwarte Piet** speelt vrolijk allerlei rollen, net waar hij zin in heeft, in de geest van de tijd.
	piet	7229	8.46	Voorstanders van **zwarte piet** zorgde voor onrust door de bussen met demonstranten tegen te houden.
	band	3094	6.59	Alle drie de leraren hebben 3e Dan, oftewel 'drie keer de **zwarte band** '.
	Amerikaan	1813	6.44	Voor de demonstratie tegen politiegeweld tegen **zwarte Amerikanen** kwamen ongeveer 5000 mensen opdagen.
	cijfer	2166	6.41	Wereldhave heeft in de eerste zes maanden van dit jaar weer **zwarte cijfers** kunnen schrijven.
	koffie	1428	5.77	Het is een sterke **zwarte koffie** geserveerd in een smal glas.
	gemeenschap	1214	5.57	Als de **Zwarte gemeenschap** in Amerika zo naar elkaar roepen dan is dat geen probleem.
	weduwe	944	5.51	Ik ben een soort **zwarte weduwe** en ben machtig.
	slaaf	921	5.48	De tango werd oorspronkelijk gespeeld door **zwarte slaven** in Argentinië.
subjects of "be X"	Collocate	Frequency	Score	Example
	wereld	44	6.32	Ja hoor, de **wereld** is zo **zwart** wit als jij hem wilt zien en te pas en te onpas tegen mensen schreeuwen is echt een manier om sympathie en begrip voor je radicale positie te winnen.

Appendix 5. Metaphorical and metonymic extensions of collocates of *blue*

All collocates are color coded as follows:

Metaphorical extension – green

Metonymic extension – yellow

nouns modified by X	Collocate	Frequency	Score	Example
	screen	18827	6.81	Many times this is also accompanied by a BSOD (**blue screen** of death) stop message, which occurs sporadically too (it is then related with nvlddmkm.sys or atimdag.sys).
	collar	9138	6.63	My father proudly held himself out to be a **blue collar** , unionized working class man but we were solidly in the middle class.
	print	10985	6.57	Am I correct in thinking this archive is essentially a big **blue print** with instructions on how to build, from simple beginnings and materials, progressively more complex tools?
	chip	9781	6.35	It demonstrates our ability to deliver the best results for **blue chip** private equity clients through competitive global auction processes, thoughtful positioning and understanding the investor universe.
	blood	7938	6.24	We speak of aristocrats as " **blue bloods** ," but the ancients would point to the same thing by noting how a person was born of the best families of the land.
	note	11985	5.85	The **blue notes** had whipped the city on the west side of the Mississippi River into a fevered frenzy, thick with anticipation.
	cheese	19520	7.47	Rich, sweet, figgy, nutty with a touch of candied peel and even incense, it's sublime with **blue cheese** and walnuts, even with plum pudding.
	plaque	6346	6.11	A **blue plaque** was installed on the building to commemorate his achievements in highlighting the role that GPs play in the health of the community.
	planet	4777	5.49	When they look at our **blue planet** from space, the beauty of the Earth brings every astronaut to tears.
	state	16441	5.48	Red and **blue states** ensure that locale magnifies differences that were mostly manageable during the administrations of Ford, Carter, Reagan, the Bushes, and Clinton.
	wave	6162	5.47	There was no **blue wave** in the 2014 midterm elections either, which was much less polarized and not as nail-biting.
subjects of "be X"	Collocate	Frequency	Score	Example
	blood	305	5.91	Judges are not immune from Lord Acton's "power corrupts" syndrome any more than royal **blood** is **blue** .
	lip	799	7.39	My skin was grey, eyes swollen, **lips blue** , and the walls were starting to close in around me.
	face	557	5.97	My **face** was **blue** , and I was gasping for breath.
	state	415	5.08	That can be a huge challenge even in good economic times, and red state women see it happening around them at higher rates than in **blue states** .
	arm	160	4.66	His body was "covered in bruises, his **arms** were **blue** , and there were scratches on his neck," she said.

Appendix 6. Metaphorical and metonymic extensions of collocates of *blauw*

All collocates are color coded as follows:

Metaphorical extension – green

Metonymic extension – yellow

nouns modified by X	Collocate	Frequency	Score	Example
	bloed	1509	6.97	Het zijn de mensen met ' **blauw bloed** '.
	maandag	1145	6.77	Dat beroep is er nooit van gekomen, hoewel hij op een **blauwe maandag** wel in een bestelbusje heeft gereden.
	lint	665	5.94	Veel stranden in Ligurië hebben het **Blauwe Lint** (Bandiera Blu) wat betekent dat het erg schoon en netjes is en dat de kwaliteit van het water erg hoog is.
	diesel	577	5.7	Er wordt vermeld dat met **blauwe diesel** 90% CO2 bespaard wordt.
	waterstof	383	5.21	Op dit moment wordt nog nergens in de wereld **blauwe waterstof** op grote schaal geproduceerd.
	vlag	4166	8.41	In 2011 ontving het voor de 25e keer de Internationale **Blauwe Vlag** , een milieuonderscheiding die garant staat voor zwemwater van uitstekende kwaliteit en een goed schoongehouden strand.
	kaas	1607	6.99	En de lekkere salade met **blauwe kaas** en kikkererwten.
	kaart	2116	6.79	De kern van het voorstel draait om het aannemen van eerder gedane voorstellen voor een **blauwe kaart** voor hooggekwalificeerd personeel, en versterking van de samenwerking met derde landen om procedures aldaar beter te laten verlopen.
	scherm	1318	6.52	Even komt het **blauwe scherm** van Telegraaf in beeld en dan crashed de app
	envelop	818	6.29	De bekende **blauwe envelop** betekent vaak dat je moet betalen.
	planeet	491	5.43	U, Heer Jezus, bukte Zich neerbuigend Ontfermend Over een **blauwe planeet**
subjects of "be X"	Collocate	Frequency	Score	Example
	vinger	9	6.14	Zijn **vingers** zijn **blauw** van de kou.

Appendix 7. Metaphorical and metonymic extensions of collocates of *red*

All collocates are color coded as follows:

Metaphorical extension – green

Metonymic extension – yellow

nouns modified by X	Collocate	Frequency	Score	Example
	flag	123693	9.63	Lowball prices are a **red flag** , says Iny, and APA investigations have discovered that a price too good to be true always comes with a story – a bad one.
	tape	61101	8.7	But rules and **red tape** will confirm the suspicions of many that government is too big.

	tide	8882	6.16	Butm, I remember that era and can assure you noone but a communist at that time could see the futility of resisting the **red tide** .
	carpet	67779	9.05	They got the chance to walk the **red carpet** , smile for the paparazzi, picked up different acting awards and relaxed after at a reception in the school.
	zone	29628	7.24	If the indicator is in the **RED zone** you should seek servicing immediately to reduce the risk of severe tire failure.
subjects of "be X"	Collocate	Frequency	Score	Example
	face	5207	9.16	The little that I could see of her **face** was bright **red** as she looked at her feet.

Appendix 8. Metaphorical and metonymic extensions of collocates of *rood*

All collocates are color coded as follows:

Metaphorical extension – green

Metonymic extension – yellow

nouns modified by X	Collocate	Frequency	Score	Example
	draad	34067	10.61	Lekker eten loopt als een **rode draad** door mijn leven.
	cijfer	3799	7.27	Onze kinderen met wat teveel **rode cijfers** komen in een crisissituatie waar juist een goed huiswerkbeleid als vangnet moet functioneren.
	lap	1227	5.95	Normaal gesproken werkt de pesterige toon van Maalderink als een **rode lap** op een oranje stier.
	diesel	962	5.56	Milieubewuste watersporters die hun schepen uitrusten met hybride aandrijving moeten bij het tanken van **rode diesel** bijzonder oplettend zijn.
	kaart	16473	9.18	Ik ben er niet voor om die jongen een **rode kaart** te laten krijgen, maar hij legde de arm om de nek van Sinisterra.
	loper	9473	8.87	In een dag zal de Indiase filmster te zien zijn op **rode lopers** in zes verschillende steden.
	oor	1379	6.06	Als regisseur krijg je dan **rode oortjes** van alle complimenten, maar...zonder fijne (lees: de juiste) mensen voor de camera kun je niks.
	verkeerslicht	895	5.53	De zeven leerlingen die zijn gezakt zijn niet gestopt voor het **rode verkeerslicht** .
	rijden	893	5.45	Intergo heeft in 2007 een onderzoek uitgevoerd naar het meervoud aan STS-passages ('door **rood rijden** ') per treinkilometer door goederenvervoerders in vergelijking met reizigersvervoerders.
subjects of "be X"	Collocate	Frequency	Score	Example
	gewricht	10	5.84	Het **gewricht** is veelal **rood** , warme n opgezwollen, wat een teken voor een ontsteking is.

	teen	9	5.67	Het resultaat is pijn, **rode tenen** , opgezwollen voeten en soms een infectie.
	neus	13	5.56	Het was zo lekker in het zonnetje aan het water, maar 's avonds merkt u pas dat uw **neus** zo **rood** is als een tomaat.
	kaart	18	5.45	Twee **rode kaarten** tegen Utrecht, een tegen AZ.
	gebied	12	4.81	Het **rode gebied** onder de lijn betekent dat berichten met deze woorden juist vaker werden verwijderd.

Appendix 9. Metaphorical and metonymic extensions of collocates of *white*

All collocates are color coded as follows:

Metaphorical extension – green

Metonymic extension – yellow

nouns modified by X	Collocate	Frequency	Score	Example
	privilege	22715	6.82	She examines how **white privilege** works to disadvantage those from BME backgrounds and will explore how universities can develop good practice for the inclusion of BME groups in higher education.
	lie	8830	5.48	He continues, "I'm not talking about the occasional **white lie** to maybe avoid a fight or to avoid hurting someone's feelings."
	supremacy	57558	8.24	The dismantling of **white supremacy** is not just white people continually talking about the dismantling of white supremacy.
	supremacist	47415	7.97	How could a **white supremacist** , misogynist and utterly transparent snake oil salesman accumulate so many votes?
	hair	38103	7.29	It isn't hard to turn back the clock and imagine him 64 years ago, his **white hair** a darker shade, his skin wrinkle-free, his compact frame darting around the edge of a soccer field chasing down errant balls.
	flag	24463	6.77	In 1991, Secretary of State James Baker famously waved a **white flag** "in submission" after almost ten hours because he needed a bathroom break.
	matter	14222	5.64	BJ Trach, a member of the firm's Executive Committee, represents institutional and individual clients in their most complex criminal and civil litigation, including **white** collar **matters** , government investigations, and complex commercial litigation.
subjects of "be X"	Collocate	Frequency	Score	Example
	knuckle	1942	8.25	I've also pulled on seams hard enough to turn my **knuckles white** without it tearing, though my suspicion is that if I tried hard enough I could rip it with the right leverage.
	face	2866	7.97	"She looked tired, drained – her **face** was **white** ," McClure says.

Appendix 10. Metaphorical and metonymic extensions of collocates of *wit*

All collocates are color coded as follows:

Metaphorical extension – green

Metonymic extension – yellow

nouns modified by X	Collocate	Frequency	Score	Example
	doek	8742	8.49	Of Dutt de komende zes jaar nog op het **witte doek** te zien zal zijn wordt aan het einde van de dag bekend gemaakt.
	Huis	1386	5.93	Het project groeit dan ook gestaag en wordt sinds vorig jaar zelfs gebruikt voor de officiële site van het Amerikaanse **Witte Huis** .
	baard	1033	5.51	We zien in de linker bovenhoek God de Vader voorgesteld als een bejaarde man met **witte baard** en haren.
	boord	951	5.4	Ouders willen voor hun kind een **witte boorden** baan, terwijl er in ambacht en techniek vaak tekorten optreden.