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The Semantic Evolution and Cultural Cognition of the English Basic Color Term "Green"—A Diachronic Analysis Based on Cognitive Anthropology

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ABSTRACT: Based on cognitive anthropology theory, this study systematically explores the semantic evolution path and cultural cognitive mechanisms of the English basic color term "green". Through analyzing the etymology, semantic extension, and usage frequency of the color term "green" in English, the study reveals its complex transformation from a natural attribute to a socio-cultural symbol. The results indicate that the semantic evolution of the color term "green" is influenced not only by the universality of human visual cognitive mechanisms, but also profoundly reflects the ecological concepts, political ideologies, and socio-psychological characteristics present in English culture. These findings provide a new analytical dimension for research on color terms and deepen the understanding of the relationship between language and culture.

Keywords: Basic color terms; Cognitive anthropology; Semantic evolution; Cultural cognition

1. Introduction

Color terms are fundamental to language, embodying human perceptual experience and cultural symbolism. Since Thomas Young and Hermann von Helmholtz formulated the trichromatic theory in the 19th century, the study of color has expanded beyond physics to encompass psychology, philosophy, linguistics, and anthropology. Goethe [1], for instance, linked color categories to emotional responses, while Goldstein [2] hypothesized physiological reactions to color. Berlin and Kay's [3] seminal work in the late 20th century identified universal constraints on basic color terms, suggesting that all languages follow a similar evolutionary pattern of color naming. However, their model focused primarily on which color terms emerge (e.g., red, green, blue) rather than why their meanings extend as they do. It has been critiqued for overlooking cultural semantics and contextual usage. This study examines the English basic color term "green", exploring its semantic evolution and cultural cognition from Proto-Indo-European roots to the present [4,5]. While previous literature has often treated color terms synchronically or comparatively, few studies have combined linguistic data with cognitive anthropological theory to trace a single term's historical development.

Building on cognitive anthropology—which links linguistic categories to cultural models and universal cognition—we propose a diachronic framework in which prototypes (e.g., vegetation) and cultural memes (e.g., ecological ideas, political symbols) interact to drive meaning change [6]. Specifically, we ask: How has the concept "green" transformed from a descriptor of natural growth into a rich set of metaphors and symbols in English? What cognitive and cultural factors have driven this transformation? To address these questions, the paper is structured as follows. We first review relevant literature on color term research, highlighting its historical background and critiques. We then outline our theoretical framework and research questions. Next, we describe our methodology, which employs corpus analysis and etymological tracing using resources such as the British National Corpus and the Oxford English Dictionary's Historical Thesaurus. Finally, we present analyses of "green" in its various uses (etymology, derived color terms, metaphors like "green-eyed monster") and discuss how these reflect shifts in cultural cognition (e.g., associations

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with illness, ecology, or politics). We aim to contribute an interdisciplinary perspective on color semantics, demonstrating how "green" exemplifies the interplay between human universals (color perception) and cultural specificity.

2. Literature Review

Ancient and early modern thinkers laid the groundwork for the study of color cognition. Plato argued that color perception requires light, an object, and an eye, while Aristotle classified colors as simple (e.g., red, blue) or compound mixtures. Enlightenment philosophers such as Locke debated whether color categories arise from experience or innate structures. Newton's optical experiments and later the Young-Helmholtz trichromatic theory in science established that the human eye possesses three color-sensitive cones. These advances positioned color as both a physical and cognitive phenomenon. Psychology further linked color to perception and emotion. Goethe's Theory of Colours famously paired colors with feelings (e.g., yellow with warmth, blue with coolness). Goldstein and subsequent researchers hypothesized physiological reactions to colors, suggesting that warm colors (red, yellow) may evoke arousal, while cool colors (green, blue) promote relaxation [7,8]. Contemporary psychology continues to explore color symbolism (e.g., why red often signifies danger or attractiveness) and color preference or naming in infants [9,10]. Collectively, this research underscores that color cognition integrates sensory physiology with learned associations.

Berlin and Kay's theory of Basic Color Terms is the most influential framework in linguistic color studies. Surveying twenty languages, they proposed that languages universally possess basic terms for black and white; with a third term, it is always red; and eventually, terms like green, yellow, and blue emerge in a relatively fixed sequence. They argued for universal perceptual constraints: shared trichromatic vision leads to similar focal colors for each term across languages. While groundbreaking, Berlin and Kay made simplifying assumptions. They established strict criteria for defining a "basic" color term (e.g., monolexemic, not subsumed by another term) and relied on standardized color chips and adult informants. Critics later identified limitations: B&K largely ignored semantics beyond denotation and minimized cultural context. For example, Lucy [11] contended that B&K's methodology—English-speaking researchers employing a color chart—embedded cultural biases. Lucy emphasized that the true meaning of color words depends on their typical usage and grammatical roles, aspects not captured by simple labeling tasks. He also noted that many languages have color vocabulary tied to specific materials or concepts (e.g., Welsh glas covering contexts for both blue and green). In summary, while B&K's universalist core was valuable, it underestimated cultural variability and semantic nuance.

Berlin and Kay later refined their model. Based on World Color Survey data, Kay and Maffi [12] proposed partition rules explaining color term emergence: first distinguishing black/white, then warm *vs.* cool (red/yellow *vs.* green/blue), isolating red, and so forth. This revision acknowledged phenomena like the frequent clustering of "warm" colors separate from "cool" ones. It also introduced an Emergence Hypothesis for cases like the Yele language, where speakers create temporary color terms from materials, suggesting that semantic fields can crystallize over time. Overall, Berlin & Kay and their successors established a foundational framework, but recent research emphasizes that color naming can also reflect communicative need and ecological prevalence, not solely perception. For instance, Gibson et al [13] found that warm colors (reds, yellows) tend to be named more precisely than cool colors (greens, blues), possibly due to their greater visual prevalence or behavioral salience.

Conversely, linguistic relativists argue that cultural and linguistic contexts shape color categories. Since the time of Whorf and Sapir, researchers have investigated whether language influences color perception. Findings in this domain have been mixed: Kay and Regier [14] acknowledged universal constraints and that linguistic differences can affect cognition. Many anthropologists and cognitive linguists emphasize cultural color symbolism. While Berlin & Kay briefly noted "cultural factors" might influence which term (e.g., green *vs.* yellow) is adopted first, they did not elaborate. Others have documented significant cross-cultural variation: some cultures lack specific terms for certain colors, or use color terms in extended, non-chromatic ways (e.g., referring only to dyes, or overlapping with texture or object terms).

Anthropologists such as Lucy and Levinson, studying non-Western languages, identified notable contrasts. Levinson's work on the Yele language demonstrated its lack of separate terms for many hues found in English; speakers instead use general terms related to brightness or composite color concepts [15]. This fieldwork suggested that not all color lexicons conform strictly to the Berlin & Kay hierarchy. Ethnosemantic studies (e.g., Rosch[16]) also indicated that cultures may group colors based on utility or cultural salience. Within cognitive anthropology specifically, color was a classic domain for investigating folk taxonomies. Early ethnographers systematically collected indigenous color terms to infer the worldview [17,18]. A famous example is the Dani of New Guinea, who possess only two basic color terms (light *vs.* dark), highlighting that basic category systems can vary dramatically across cultures, even if focal points often show similarities.

Nevertheless, universalist patterns persist in some contexts. Multinational surveys (e.g., the World Color Survey) confirm that focal colors (e.g., prototypical green) cluster similarly worldwide, suggesting a common physiological basis. However, cognitive anthropologists stress that extensions from a focal color are often culture-specific: green might metaphorically denote fertility and nature in some cultures, or inexperience and naivety in others. Studies of cultural metaphors reveal recurrent themes (e.g., green for envy or illness in Western cultures) and unique regional connotations (e.g., green's sacred associations in Islam) [19,20]. The present study contributes to this field by integrating diachronic data with cognitive theory to explore how and why English speakers have attached new meanings to "green" over time.

Although numerous color term studies are synchronic or typological, fewer have adopted a historical perspective on a single term like "green". Some linguists have traced color etymologies. For example, Kay et al.noted that English green derives from Proto-Germanic grōni- ("to grow"), linking the color intrinsically to vegetation. This etymology suggests that the earliest sense of green was "vigorous, growing", not merely the hue itself. Historical dictionaries reveal that Old English grene primarily meant "fresh, growing" and only later narrowed to denote the spectral color [21,22]. By the medieval period, usage already carried symbolic ideas: in literature, green often evoked spring, youth, or even deceit (as in "green-sickness", an archaic term for a pale complexion).

Recent corpus studies of English have begun to quantify such semantic shifts. For instance, analyses using Google Ngrams or the Historical Thesaurus can pinpoint the emergence of senses like "green-eyed monster" or "greenback" [23,24]. However, there has been no comprehensive effort to integrate these diachronic trends within a cognitive-anthropological framework. Our literature review finds that while isolated facts about "green" exist (e.g., noting the US Civil War origin of "greenback" or Shakespeare's coinage of jealousy metaphors), they have not been systematically analyzed for underlying semantic patterns [25].

In summary, the field has evolved from early physiological and philosophical observations of color to a rich interplay of universalist and relativist theories. Modern research increasingly incorporates cognitive modeling (e.g., Zaslavsky et al. on communicative efficiency) and recognizes the role of cultural narratives [26]. This study builds on these advances by focusing intensively on one basic color term, "green", tracing its diachronic semantic trajectory and the cultural cognition that underpins it.

3. Research Methods

A corpus is a collection of representative authentic language materials gathered based on random sampling, and it reflects how people use language in daily life. A corpus has the following two characteristics: (1) the materials in a corpus are language data that have appeared in real language use; (2) a corpus cannot do without computer support, as it is a large-scale resource of linguistic knowledge carried and stored by computers. The advantage of a corpus lies in its extremely large size and highly detailed content, as well as in its particularly accurate and fast retrieval capabilities. Moreover, choosing corpora as a data source provides researchers with first-hand, unprocessed language data. This not only enables researchers to obtain the most abundant and vivid example sentences, but also reveals the frequency and distribution of the search terms. Therefore, linguistic phenomena can be analyzed from it. The present study mainly uses the following corpora and several authoritative dictionaries as sources:

- British national corpus(BNC).
- Historical Thesaurus of the Oxford English Dictionary(HTOED).
- Chambers Dictionary of Etymology.
- Oxford Advanced Learner's English-Chinese Dictionary(8th edition).

4. Origins and Timeline of Derived Color Terms in the English "Green" Semantic Field

4.1. Color Terms Originating from the Expression of the Color "Green"

4.1.1. Green

Etymology of "Green"

The English word"green" evolved from Middle and Old English grene, originally meaning "the color of living vegetation". It ultimately derives from Proto-Germanic gronja- meaning "to grow" (the root of Old Saxon groni, Old Frisian grene, Old Norse grænn, Danish grøn, Dutch groen, Old High German gruoni, and modern German grün), and it can be traced back to the Proto-Indo-European root ghro- "to grow". The English word grass (meaning "grass") can likewise be traced to the Proto-Indo-European root ghros- "to sprout, to sow" [27].

Chronology of the Emergence of "Green" and Its Derivatives

The HTOED shows that the derivational process of the word "green" is quite well developed. The vast majority of the 14,059 instances of "green" provided by the BNC are used to denote the color. When "green" is modified by other words, it is typically accompanied by modifiers such as "dark", "pale", or "bright" (Table 1).

Table 1. Chronology of "Green" and Its Derivative Words.

Part of Speech	Color Term	Word Sense	Period of Emergence and Usage
aj	green<grene	绿色的	OE–
n	green<grene	绿、绿色、绿色的事物	OE–
aj	gærsgrēne	草绿色的	OE + a1400–
aj	ēallgrēne	亮绿色	OE
aj	grenhæwen	带绿色的	OE
aj	hæwengrēne	蓝绿色的	OE
n	greenness<grennes	绿、绿色、绿色的事物	OE–
n	greenhead	绿、绿色	cl325–c1440
aj	enker—green	鲜绿色的、亮绿色的	cl375
aj	greenish	浅绿色的、略带绿色的	cl384–
aj	gaudy—green	黄绿色的	c1386–1590
n	greenship	绿、绿色	al400
vt	green	使变成绿色	1570–
n	sap—green	暗绿色颜料	1578–
av	greenly	副词 绿色	1583 + 1816–
n	sea—green	蓝绿色	1598–
aj	sea—green	蓝绿色的	1603–
n	green	绿色颜料	1611–
aj	wave—green	蓝绿色的	1621
aj	emerald—green	鲜绿色的、亮绿色的	1646–
n	parrot—green	黄绿色	1646
n	grass—green	草绿色	1657–
aj	sap—green	暗绿色的	1658–
n	leek—green	韭菜绿	1662
n	willow—green	浅绿色	1672–
n	sap—green	暗绿色	1686–
n	greening	变绿	a1700–
n	greenishness	绿色	1727 + 1865
n	lily—green	浅绿色	1739
n	pea—green	鲜绿色、亮绿色	1752
n	gosling—green	黄绿色	1756–
n	olive-green	橄榄绿	1756/1757–
aj	bluish—green	蓝绿色的	1769
aj	ever—green	常绿的	1796 + 1860
n	mountain—green	山绿色	1796–
n	pistachio—green	淡黄绿色	1796–
aj	greening	变绿的	1800–
n	siskin—green	黄绿色	1805/1817–
aj	gosling—green	黄绿色的	1807
n	sage—green	灰绿色	1810–
n	forest—green	深绿色、暗绿色	1810
aj	bottle—green	深绿色的、暗绿色的	1816–
n	mountain—green	绿颜料	1822
aj	greeny	浅绿色的、略带点绿的	1826–
n	bladder—green	绿颜料	1830
aj	rifle—green	深绿色的、暗绿色的	1840

n	spinach—green	菠菜绿	1845–
aj	greening	变绿的	1846–
aj	reddish—green	红绿色的	1849
aj	blue—green	蓝绿色的	1855
n	myrtle—green	桃金娘绿	1858–
aj	leek—green	韭菜绿的	1864–
vt	begreen	使变成绿色	1864
n	greenage	绿色泽、绿光泽	1874
n	nile—green	浅绿色	1871–
n	malachite-green	绿染料	1880–
aj	brown—green	棕绿色的	1882
n	steel—green	深绿色、暗绿色	1882
aj	greenable	能变成绿色的	1882
n	cress—green	水芹绿色	1883–
aj	sage—greeny	灰绿色的	1884
n	water—green	浅绿色	1884–
n	mignonette—green	浅绿色	1888
aj	steel—green	深绿色的、暗绿色的	1882
aj	lime—green	鲜绿色的、亮绿色的	1890–
n	rifle—green	深绿色、暗绿色	1891
aj	leaf—green	叶绿色的	1891–
aj	jade—green	翡翠绿	1892
aj	forest—green	深绿色的、暗绿色的	1892–
aj	twig—green	鲜绿色的、亮绿色的	1892
aj	water—green	浅绿色的	1893
aj	olive—greenish	橄榄绿的	1894
n	peacock—green	蓝绿色	1895
n	spinach—green	深绿色、暗绿色	1896–
n	lizard—green	蜥蜴绿	1899
aj	lizard—green	蜥蜴绿的	1899
aj	greensome	浅绿色的、略带点绿的	1901–
n	browny—green	棕绿色	1905–
aj	beech—green	山毛绿	1908
n	beech—green	山毛绿的	1916
n	ice—green	浅绿色	1925–
n	kellygreen	爱尔兰绿、鲜绿色、亮绿色	1936–
aj	seaweed—green	深绿色的、暗绿色的	1937–
aj	spinach—green	深绿色的、暗绿色的	1937–
n	tea—green	灰绿色	1956–
aj	viper—green	蝰蛇绿	1958–
aj	lily—green	浅绿色的	1965–
n	greenback	绿色纸币，尤指南北战争时期法定钞	1861–
n/aj	green-eyed monster	嫉妒、嫉妒的人	1604–
aj	green with envy	极其嫉妒	1567–
n	green gown	草渍长袍，引申指性行为	c. 1400–
n	green banknote	绿色钞票(美元俚语)	1925–

4.1.2. Verdant

Etymology of “Verdant”

The English word “verdant” is a blend of the Latin viridans (the present participle of viridare, meaning “to become green”) and the French verdoyant (the present participle of verdoyer, meaning “to become green”), both of which derive from the Latin vireō, meaning “green” (Table 2). The adjective “verdant” has been in use since 1581.

Chronology of the Emergence of "Verdant" and Its Derivatives

The 50 instances of "verdant" provided by the BNC show that it is mainly used to refer to "green plants", and it is also used to refer to a "part of a green plant".

Table 2. Chronology of "Verdant" and Its Derivative Words.

Part of Speech	Color Term	Word Sense	Period of Emergence and Usage
aj	verdant	绿色的	1581–
n	verdancy	绿、绿色	1631–
av	verdantly	副词 绿	1828–

4.2. Color Terms for "Green" Derived from Objects

4.2.1. Emerald

Etymology of "Emerald"

The English word "emerald" (the jadeite or emerald-green gemstone) evolved from Middle English emeraude, which was borrowed from Old French esmeralde (or esmeraude). The Old French term comes from the Latin smaragdus, which was borrowed from the Greek smaragdos "emerald" (Table 3). The Greek term is related to the Hebrew bareqeth and the Akkadian barraqtu, both meaning "emerald" or "emerald-green" (literally "shining thing").

Chronology of the Emergence of "Emerald" and Its Derivatives

In the 248 instances of "emerald" provided by the BNC, 175 are used to denote the color, which indicates that the meaning "emerald" as a color is primary.

Table 3. Chronology of "Emerald" and Its Derivative Words.

Part of Speech	Color Term	Word Sense	Period of Emergence and Usage
aj	emerald	鲜绿色的、翠绿色的	1598–
aj	emerald—green	鲜绿色的、翠绿色的	1646–
n	emerald	绿色颜料	1712
aj	emeraldine	鲜绿色的、亮绿色的	1855–
n	emeraldine	绿色颜料	1864
n	emerald green	绿色颜料	1879–

4.2.2. Olive

Etymology of "Olive"

The English word "olive" (olive-green) in Middle English was also "olive", borrowed from Old French olive, which itself comes from Latin oliva. The Latin term in turn is derived from the Greek elaia (meaning "olive" or "olive tree") and possibly originates from a Cretan (Aegean) language [28]. The olive branch first appeared as a symbol of peace around the early 13th century. From the late 14th century onward, the word in English came to refer to the tree's fruit or berry, and around the early 17th century, it began to be used as a color term.

According to descriptions of different parts of the olive tree and different stages of fruit development, the English word "olive" has multiple color meanings (Table 4). For example, the unripe fruit's color is a somewhat dark yellow-green; the ripe fruit is a slightly yellowish brown or brownish yellow; and the leaves of the olive tree are a slightly dark gray-green with a silvery sheen.

Chronology of the Emergence of "Olive" and Its Derivatives

In the BNC, "olive" appears 921 times, of which 94 occurrences are used as color terms. The data also show that when referring to skin color, the meaning "yellow-brown" is the most fully developed and can occur alone (e.g., "her faintly olive skin" meaning "her yellow-brown skin"). However, the other two meanings, "yellow-green" and "gray-green", most often must be used with a basic color word (e.g., "clothes in olive green", "olive-grey windows").

Table 4. Chronology of "Olive" and Its Derivative Words.

Part of Speech	Color Term	Word Sense	Period of Emergence and Usage
aj	olive—coloured	黄褐色的	1613–
aj	olive	橄榄绿的、茶青色的	1657–
n	olive	橄榄绿、茶青色	1662–
aj	olive—coloured	橄榄绿的、茶青色的	1752–
n	olive—green	橄榄绿、茶青色	1756/1757–
aj	olivaceous	橄榄绿的、茶青色的	1776–
aj	olive—greenish	橄榄绿的、茶青色的	1894
n	olive—yellow	黄绿色	1894
aj	olivescent	橄榄绿的、茶青色的	1900

4.2.3. Aquamarine

Etymology of "Aquamarine"

The English word "aquamarine" (greenish-blue gemstone or color) is a variant of "beryl", borrowed from the French (or Provençal) term for "blue-green beryl" (French aigue-marine). The French word comes from Latin aqua marina, meaning "seawater". It began to be used as a color term in 1846 (Table 5).

Chronology of the Emergence of "Aquamarine" and Its Derivatives

In the 50 instances of "aquamarine" provided by the BNC, 44 denote the color, indicating that its color sense is predominant.

Table 5. Chronology of "Aquamarine" and Its Derivative Words.

Part of Speech	Color Term	Word Sense	Period of Emergence and Usage
aj	aquamarine	绿蓝色的	1846
n	aquamarine	绿蓝色	1862–

4.2.4. Jade

Etymology of "Jade"

The English word "jade" (jade-green) comes from the French la jade, which is derived from the Latin ilia, meaning "flank, side". Before it had developed into an accurate color adjective (in the 20th century), it was already used as a color term, as in phrases like "jade-colored" (Table 6).

Chronology of the Emergence of "Jade" and Its Derivatives

In the BNC, "jade" appears 404 times, of which 35 occurrences are used as a color term. The examples in the BNC indicate that "jade" as a color-denoting adjective has been established, even though there is no evidence of this usage in the HTOED.

Table 6. Chronology of "Jade" and Its Derivative Words.

Part of Speech	Color Term	Word Sense	Period of Emergence and Usage
aj	jade—coloured	绿色的	1868–
aj	jade—green	绿、绿色	1892
n	jade	绿	1921–

4.2.5. Lime

Etymology of "Lime"

The English word "lime" (lime fruit or greenish-yellow) was borrowed in 1638 from the Spanish lima, which in turn comes from the Arabic lima, meaning "citrus fruit"; this word may have evolved from the Persian limun [29]. From

the word began to be used in English as a color term in 1890 (Table 7). It shares the same origin as the word "lemon" (borrowed from French limon), except that "lemon" refers to the ripe lemon (belonging to the yellow color field).

Chronology of the Emergence of "Lime" and Its Derivatives

In the BNC, the word "lime" appears 36 times as a color term, and in those instances it almost always appears together with "green". However, the independent use of "lime" as a color term is far more common on the web than shown in the BNC examples.

Table 7. Chronology of "Lime" and Its Derivative Words.

Part of Speech	Color Term	Word Sense	Period of Emergence and Usage
aj	lime—green	鲜绿色的、淡黄绿色的	1890–
n	lime	鲜绿色、淡黄绿色	1923–

5. Usage of Color Terms in the English "Green" Semantic Field

5.1. Distribution of "Green" Semantic Vocabulary in the BNC Corpus

From the above table, we can see that among the English "green" semantic field terms, only one is truly a core term: "green" itself. It is also the oldest of these words and lies at the center of the semantic field. All the other words come from Latin or French, but their color meanings were seldom directly borrowed (Table 8). Only two words may have been directly borrowed as color terms: one is "verdan", and the other is "jade". On the other hand, the color meanings of "emerald" and "olive" may have been created within English itself.

Table 8. Distribution of English "Green" Semantic Field Vocabulary in the BNC.

Color Term	Frequency in the British National Corpus (BNC)	Example Sentences as Color Terms	Referent
green	14,059	9359	eyes, clothes, boxes, paper, dough, blankets, ponds, cars, grass, trees, pigeons, grains, fields, woods, lights, *etc.*
verdant	50	50	peas, grass, leaves, parks, forests, valleys, meadows or pastures, vineyards, hills, *etc.*
emerald	248	175	eyes, perfume, clothing, textiles, carpets, furniture, doors and windows, tiles, cars, hills, land, leaves, flowers, snakes, snow, water, light, sky, stars, *etc.*
olive	921	94	skin, clothes, hats, boots, leaves, *etc.*
aquamarine	50	44	eyes, clothes, shoes, blankets, houses, water, sea, sky, night, *etc.*
jade	404	35	clothes, bags, fields, sea, sky, rainbow, *etc.*
lime	639	36	clothes, sofas, walls, window frames, feathers, leaves (leaves of plants other than lime), *etc.*

5.2. Years of Emergence of Semantic Extensions of English "Green"

According to the Chambers Dictionary of Etymology and the HTOED, the times at which different senses emerged were organized into the following chronological table of semantic extensions for each word in the English "green" semantic field:

Most of the green-related vocabulary originates from minerals and plants. From the above table, we can see that "green" appeared several hundred years earlier than the other words in the "green" semantic field, which indicates that distinctions and naming within the cool color domain occurred much later than in the warm color domain (Table 9).

Table 9. Timeline of the Emergence of Semantic Extensions for English "Green" Words.

Lexical Item	Semantic	Date of First Attestation	Lexical Item	Semantic	Date of First Attestation
green	green	OE	**green**	deception	1884
	green plants	OE		sexual relations (slang)	1889
	vigorous, lush	OE		green absinthe	1905
	(fruit) green and unripe	OE		traffic green light	1914
	wound festering	1297		green banknotes	1925
	green-faced	a1300		green fingers, highly skilled	1934
	unprepared	c1300		permission, license	1937
	green fabric	c1320		green channel	1968
	young	1412		ready, prepared	1970
	fresh	c1460		environmentalism	1973
	agricultural products	c1477		green	1581
	(wine) young wine; immature wine [1]	1483	**verdant**	lush	1590
	ocean	a1500		inexperienced	1824
	inexperienced	1548	**emerald**	emerald	c1300
	unprocessed (wood)	1577		green	1598
	green—eyed (jealousy)	1596	**olive**	olive	1398
	gullible	1605		olive green	1662
	green table Scotland	a1670	**aquamarine**	aquamarine	1727
	green vegetables	1725		turquoise	1846
	vigorous and energetic	1766	**jade**	jade	1727
	agriculture	1805		green	1921
	rot	1863	**lime**	lime	1638
	greenhouse	1875		bright green	1923

[1] Green wine: In historical English usage, green wine refers to a young, newly-fermented wine whose flavours have not yet matured—comparable to modern Portuguese Vinho Verde ("green wine" = "young wine"). It does not denote faulty brewing or the use of non-grape ingredients.

Cross-linguistic psycholinguistic evidence supports this sequence. Large-scale analyses [30] show that languages lexically subdivide warm hues (red, orange, yellow) earlier and more precisely than cool hues (blue, green). This pattern accords with Berlin & Kay's evolutionary order and explains why English coined multiple warm-colour terms centuries before items such as "olive" or "aquamarine" appeared.

The word "green" has the richest array of extended meanings. The word "verdant" inherited two of its extended meanings from "green", and the rest of the words have no extended meanings. Extended meanings of "green" include metaphorical senses of "taking on the color of something else", such as "green fabric", "vegetables", "the ocean", *etc.*; there are also meanings expanded from "color changes" in plants and animals, such as "becoming purulent", "face turning green", "decaying", *etc.* Like in other languages, English "green" also means "unripe, immature". This was an original conceptual metaphor accumulated in the early stages of human civilization through gathering food, later extended to human society as a metaphor for "not prepared", "young, immature", and further to meanings such as "inexperienced", "easily deceived". Plants turning from green to yellow reflect their growth process to withering: yellowed fallen leaves signify "decay, aging", whereas green, by contrast, implies "tender, fresh". This is a natural understanding in the development of human society. Etymologically, "green" comes from "to grow", and thus it evolved into extended senses like "thriving and flourishing", "having vitality, energy", and even "sexual intercourse". English has also extended the "unripe, immature" sense into the domain of human products, yielding an extended meaning of "unfinished, incomplete". The meanings "green light", "environmental protection", "green-eyed (jealousy)", *etc.*, and their associated figurative extensions, all belong to Anglo-American original culture, later spreading to other languages, especially the first two, which have become global symbols of the color green.

5.3. Usage Frequency of "Green" Semantic Vocabulary

In this study, we examined the usage frequencies of the seven main color terms in the English "green" semantic field using the Google Ngram database. The line chart shows that "green" has the highest frequency, followed by

"olive"; the other five words have relatively low usage frequencies. The word "lime" has a relatively high frequency, due to its homonym "lime" (meaning calcium oxide).

From the Figures 1 and 2, we can see that the word "verdant" has declined in frequency since 1840 and shows a trend of gradual marginalization, while the word "aquamarine" has maintained a very low usage frequency for the past 200 years.

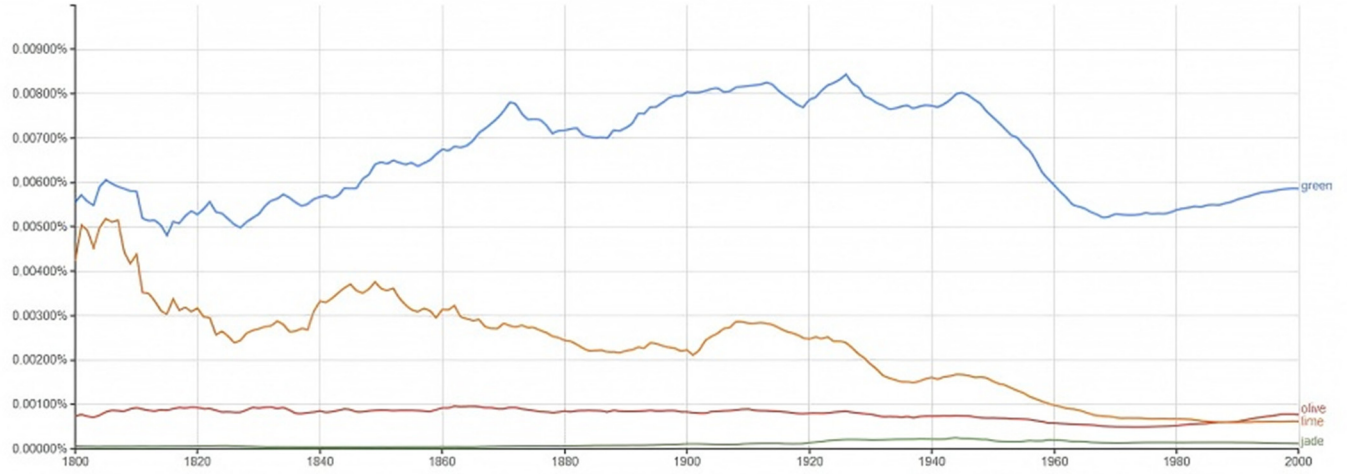

Figure 1. Frequency trend of vocabulary in the English green semantic field (1800–2000).

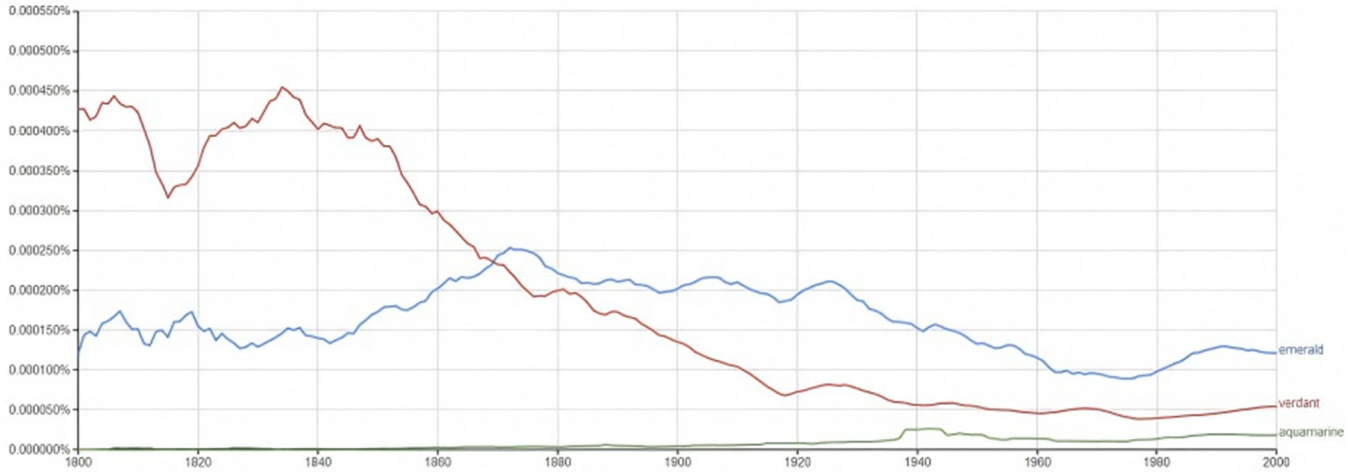

Figure 2. Frequency trend of vocabulary in the English green semantic field (1800–2000).

6. Extension and Development of the English "Green" Semantic Field

6.1. Main Categories of Semantic Extension of English "Green"

In Oxford Advanced Learner's English-Chinese Dictionary(8th edition), green has three parts of speech (adjective, noun, and verb), which contain different meanings.

When used as an adjective, it has the following meanings:

(1) COLOUR: having the color of grass or the leaves of most plants and trees
(2) COVERED WITH GRASS: covered with grass or other plants
(3) FRUIT: not yet ready to eat
(4) POLITICS: concerned with the protection of the environment; supporting the protection of the environment as a political principle
(5) PERSON: (of a person) young and lacking experience
(6) PERSON: (of a person or their skin) being a pale color, as if the person is going to vomit.

When used as a noun, it has the following meanings:

(1) COLOUR: the colour of grass and the leaves of most plants and trees
(2) VEGETABLES: green vegetables

(3) AREA OF GRASS: an area of grass, especially in the middle of a town or village
(4) AREA OF GRASS: an area of grass cut short around a hole on a golf course
(5) POLITICS: the Green Party (=the party whose main aim is the protection of the environment).

When used as a verb, it has the following meanings:

(1) CREATE PARKS: to create parks and other areas with trees and plants in a city
(2) POLITICS: to make someone more aware of issues connected with the environment; to make something appear friendly towards the environment.

Looking at the etymology, it can be seen that green has existed since Old English. Old English grene, of the color of living plants, about plants, growing, living, vigorous, figurative, of plants, freshly cut, of wood, unseasoned, earlier groeni, through the sense of color of growing plants. It can be seen that the word green in English originated from plants. That is, its archetypal meaning should be plants. Since the appearance of the word green, its meaning has constantly been changing with the development of society. From 1200, it was covered with grass or foliage. In the mid-13C, it was about the skin or complexion of one who was sick. From the early 14C, fruit or vegetables were unripe and immature; and of persons tender age, youthful, immature, inexperienced, hence gullible, immature with regard to judgment [31].

In Anglo-Saxon times, green originally meant plants, and since plants in nature are mostly green, the word green was gradually refined in 12C to mean the color of things. Our physical health and emotions are reflected in our faces, which sometimes turn green when we are sick and angry. So, in 13C, green is used again to mean feeling sick or angry. Because plants are green when they are immature, the word green extends from the word used to denote the immaturity of plants to the immaturity of other things, such as green brick. And by extension, to the immaturity of people, that of youth, and then to extend the meaning of inexperience, easily deceived. At 12C–14C, due to the impermanence of green, the passing of spring and autumn, and the limited dyeing techniques of the time, green paint was unstable and highly toxic and was therefore often described as the color of demons and witches. Green has been given an unstable, negative meaning during this period [32]. Green thumb (green fingers), natural for gardening by 1938, originally referred to the horticultural skills of the people, and later extended to have the ability, meaning they have the means. In the 20th century, the practice of using red and green as traffic lights in London became popular worldwide, so the English word green was also given the meaning of permission.

As mentioned above, in the 1960s, people gradually realized the importance of protecting the ecological environment. Green also extended the meaning of environmental protection, and the Green Party has emerged. The American Green Party is a national political party formed in 1991 by the voluntary union of many states. It is a political party developed from the non-governmental organization of environmental protection. The Green Party has proposed political propositions such as ecology first, non-violence, grass-roots democracy, and anti-nuclear principles. It has actively participated in politics and carried out environmental protection activities, which have promoted the global environmental protection movement. Therefore, green has been given a political meaning.

According to the dictionary, etymology, and literature, Table 10 summarizes the semantic evolution of the basic color term green from Old English to Modern English (Table 10).

Table 10. Diachronic Semantics of green from the Old English Period to Modern Times.

Period	Semantics
Anglo-Saxon Period/Old English (450–1150)	(1) plants (2) color
Mid-13C	(1) plants (2) color (3) sick; angry
14C	(1) plants (2) color (3) sick;angry (4) (thing) immature; (people) young (5) don't have experience; gullible
15C-16C	(1) plants (2) color (3) sick;angry (4) (thing) immature; (people) young (5) don't have experience; gullible

19C-21C	(1) plants (2) color (3) sick; angry (4) (thing) immature; (people) young (5) don't have experience; gullible (6) jealous (7) permission (8) be good at gardening (9) ecology (10) politics

6.2. Semantic Analysis of "Green" in Modern English

Table 11 shows that the meanings of "green" include green objects, denotation, ecology, politics, symbolism, permission, illness, gardening proficiency, jealousy, youth, immaturity, standards, and health. Among these, the meaning related to green objects accounts for the highest proportion, at 74.8%, whereas the meanings of "standards" and "health" account for the lowest proportion, at only 0.1% (Table 11).

Table 11. Synchronic Semantic Analysis of green in Modern Times.

Color Term	Semantic	Number	Ratio(%)	Example
green	color	748	74.8	green eyes
	referential	84	8.4	green day (band), the green berets
	ecology	98	9.8	green chemistry, green job
	politics	30	3	The green party, green line
	symbol	16	1.6	The green arrow, green underlines
	permission	14	1.4	green light
	sick	2	0.2	green sickness, the green skinned youth
	be good at gardening	2	0.2	green thumb
	jealous	2	0.2	green fixtures, green head
	young; immature	2	0.2	"they (children)'re green."
	standard	1	0.1	The green curve
	healthy	1	0.1	green food

Recent quantitative work on colour-term derivation in Indo-European languages [33] demonstrates that more than 80% of green lexemes originate in plant-based metaphors. Modern English records over 180 productive compounds headed by "green" (e.g., "greenfield, greenfly, green tea"), far exceeding parallel formations for "red" (~120) or "blue" (~95). This breadth confirms that "green" is, conceptually and lexically, the colour term with the widest semantic proliferation in present-day English.

7. Ecological Metaphors and Cultural Cognition in the "Green" Semantic Field

The metaphorical meaning of GREEN IS ECOLOGY is most prominent in English; it can be seen that it is closely related to modern life. This part of the data will be used as a reference in this section to analyze and explain the semantic embodiment of English ecological views. In English, the conceptual metaphor of GREEN IS ECOLOGY is metaphorically expressed in terms of environmental protection, and there are 98 items in all, which are mainly embodied in the expressions of green chemistry, green job, and so on [34]. Here are some examples:

(1) Dramatic growth beginning in 1950 (above 1.8% per year) coincided with significantly increased food production due to the industrialization of agriculture by the Green Revolution. The rate of human population growth peaked in 1964, at about 2.1% per year.

(2) U.S. home buyers are increasingly demanding energy efficiency and the use of sustainable materials both in new homes and in remodeling projects. "Green homes" will grow from 17% of the residential construction market in 2011 to 38% by 2016, with a fivefold increase in revenues, according to the National Association of Home Builders.

(3) This year, i'm buying reusable fabric gift bags—i'm not crafty enough to make them myself or decorate brown paper bags or old newspapers, though those are options, too. The biggest way my family has tried to green up our act at the holidays is to buy an organic, freerange turkey for Christmas dinner rather than a turkey bred for

breasts so big that it can't stand.

In case (1), the green revolution is a third world of technological change in agricultural production that led to a significant increase in food production and hence birth rate. Promoting agricultural technology to meet survival conditions reflects the human attitude towards life, so the ecological concept classifies it as the value of living. In example (2), the pursuit of quality of life, which is part of the wellbeing ecology, is reflected in the description of the American homebuyer's demands for sustainable materials for their homes. In example (3), the ecological concept of care is demonstrated by buying reusable bags and improving one's behavior so that human behavior is less damaging to the environment.

Based on the data analysis, this thesis presents the ecosophy ecological views contained in English data as follows.

The above table shows that the ecosophy view of care embodied in English data is the most, followed by wellbeing (Table 12). The main performance of care is through some measures to improve energy consumption, to achieve environmentally friendly purposes, such as using recycled bags instead of disposable bags, using green energy, and re-using items. Well-being is manifested in adopting green measures to improve people's quality of life, such as green housing built with science and technology, and adopting new agricultural technologies to engage in green industries in modern agriculture. To sum up, English people are more inclined to start from the small things in life, and to take scientific and technological means to achieve environmental care. The key point is that both pay attention to the well-being and the improvement of people's living standards, which embodies the humanistic care.

Table 12. Distribution of Ecosophy Views in English.

Ecosophy	Number	Ratio(%)
Care	53	54
Wellbeing	27	28
Social Justice	9	9
Environment Limits	4	4
Value Living	2	2
Resilience	2	2
Now and the Future	1	1

8. Conclusions and Outlook

This study thoroughly analyzes the semantic field of the English color word "green", covering its etymology, semantic extensions, and cultural connotation exploration, revealing the evolutionary trajectory of the English color word "green" from a concrete expression of natural phenomena to a diverse cultural symbol. The semantic extensions of the color word "green" reflect the deepening of human understanding of nature and the development and transformation of social culture, demonstrating the synergy between universal cognition and cultural specificity. Future research can be further extended to cross-cultural comparative analyses of color terms, deeply exploring the commonalities and differences of color terms across different cultures and investigating the underlying cultural cognitive mechanisms. At the same time, with the advancement of corpus linguistics, richer and larger-scale corpus resources can be utilized to conduct more comprehensive and detailed quantitative analyses of color terms, to reveal the usage characteristics and semantic evolution patterns of color terms in different contexts, thereby further advancing the in-depth development of color term research.

Author Contributions

S.W.: writing the manuscript, reviewing and editing the manuscript, and approving the final version. Y.Y.: writing the manuscript, reviewing and editing the manuscript, and approving the final version.

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Not applicable.

Informed Consent Statement

Not applicable.

Data Availability Statement

No external datasets were used in this study. All data were derived from publicly available literature or author analysis.

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References

1. Goethe JWV. *Zur Farbenlehre*; J.G. Cotta'schen Buchhandlung: Stuttgart, Germany, 1810. doi:10.5479/sil.414424.39088007009129.
2. Goldstein K. Some experimental observations concerning the influence of colors on the function of the organism. *Am. J. Phys. Med. Reha.* **1942**, *21*, 147–151.
3. Berlin B, Kay P. *Basic Color Terms: Their Universality and Evolution*; University of California Press: Berkley, CA, USA, 1969.
4. Al-Tamimi J. The semantic structure of color terms in Arabic: A cognitive approach. *Theory Pract. Lang. Stud.* **2021**, *11*, 9.
5. Chen J. Greenback: Definition, Origin, and History. *Investopedia* **2022**, *6*, 19.
6. Cognitive Linguistics Introduction Editorial Group. *Introduction to Cognitive Linguistics*; Fudan University Press: Shanghai, China, 2009.
7. Fillmore CJ, Baker C. *The Oxford Handbook of Linguistic Analysis*; Oxford University Press: Oxford, UK, 2012; pp. 313–340.
8. Gheltofan D, Punga L. Colour Based Phrases in Romanian, Russian and English. *Buletinul Stiintific al Universitatii Politehnica din Timisoara Seria Limbi Moderne* **2018**, *17*, 19–31.
9. Golda P, Jedziniak A, Mezyk J, Ryszka J, Uchman T. Colour Terms in Five Linguistic Images of the World: The Semantic Perspective. *GEMA Online J. Lang. Stud.* **2022**, *22*, 39–58.
10. Lucy JA. Linguistic Relativity. *Annu. Rev. Anthropol.* **1997**, *26*, 291–312.
11. Kay P, Maffi L. Color appearance and the emergence and evolution of basic color lexicons. *Am. Anthropol.* **1999**, *101*, 743–760.
12. Guardian Staff. Readers Reply: Why Is Envy Green? Is It the Same in Other Cultures? *Guardian* **2021**, *2*, 14.
13. Gibson E, Futrell R, Jara-Ettinger J, Mahowald K, Bergen L, Ratnasingam S, et al. Color Naming across Languages Reflects Color Use. *Proc. Natl. Acad. Sci. USA* **2017**, *114*, 10785–10790.
14. Kay P, Regier T. Language, thought and color: recent developments. *Trends Cogn. Sci.* **2006**, *10*, 51–54.
15. Kay P, Berlin B, Merrifield W. Biocultural implications of systems of color naming. *J. Ling. Anthropol.* **1991**, *1*, 12–25.
16. Rosch EH. Natural categories. *Cogn. Psychol.* **1973**, *4*, 328–350.
17. Laboy W. *The Boundaries of Words and their Meanings*; Oxford University Press: Oxford, UK, 2004; pp. 67–90.
18. Lai HL, Lu SC. Semantic distributions of the color terms, black and white in Taiwanese languages. In Proceedings of the 26th Pacific Asia Conference on Language, Information, and Computation, Bali, Indonesia, 7–10 November 2012; pp. 163–170.
19. Lakoff G. The contemporary theory of metaphor. In *Cognitive Linguistics: Basic Readings*; Geeraerts D, Ed.; Mouton de Gruyter: Berlin, Germany; New York, NY, USA,1993.
20. Li HY. *Semantic Analysis of Modern Chinese Color Terms*; Commercial Press: Beijing, China; pp. 8–9.
21. Meng P. A Language and Culture Comparative Study of Three Primary Colors in English and Chinese Idioms and Usual Expressions from the Perspective of Metaphorical Cognition. In Proceedings of the *2021 International Conference on Education, Language and Art (ICELA 2021)*, Sanya, China, 26–28 November 2021; pp. 241–245.
22. Moore C, Romney K, Hsia T. Shared cognitive representations of perceptual and semantic structures of basic colors in Chinese and English. *Proc. Natl. Acad. Sci. USA* **2000**, *97*, 5007–5010.
23. Pan F. *Cultural Semantics of Chinese Color Terms*; Wuhan University Press: Wuhan, China, 2015.
24. Phornthipphayaphanit T, Wongthai N. A diachronic Study on Metaphorical Uses of Color Terms in Thai: A Cognitive Linguistics Approach. Doctoral dissertation, Srinakharinwirot University, Bangkok, Thailand, 2021.
25. Shakespeare W. *The Tragedy of Othello, the Moor of Venice*; Folger Shakespeare Library: Washington, DC, USA, 1604.
26. Stibbe A. *Ecolinguistics: Language, Ecology and the Stories We Live by*; Routledge: London, UK, 2015.
27. Tavaragi M. Colors and its significance. *Int. J. Indian Psychol.* **2016**, *3*, 115–131.
28. Trafton A. Analyzing the Language of Color. *MIT News.* **2017**, *9*, 18.
29. Yao XP. Review of Basic Color-Term Theory and the Diachronic Evolution of Chinese Basic Color Terms. *Foreign Lang. Teach. Res.* **1988**, *1*, 19–28.
30. Yang YL. A Century of Research on Color Semiotics. *Foreign Lang. Teach. Res.* **2003**, *1*, 40–46.

31. Xue YH, Yang Z. Color Terms and the Theories. *Foreign Hist. Stud.* **2013**, *1*, 75–81.
32. Xie HJ, Zhang LP. *A Contrastive Study of Chinese and English Color Terms*; Shanghai Lexicographical Publishing House: Shanghai, China, 2004, 12, 1.
33. Viti C. Semantic Variation and Semantic Change in the Color Lexicon. *Linguistics* **2025**, *63*, 949–1027. doi:10.1515/ling-2023-0161.
34. Zhang ZY, Zhang QY. *Lexical Semantics*; Commercial Press: Beijing, China, 2001.