3-14-2024

The History of -eer in English: Suffix Competition or Symbiosis?

Zachary Dukic
Illinois State University, zdukic@ilstu.edu

Chris C. Palmer
Kennesaw State University, cpalme20@kennesaw.edu

languages

MDPI

Article

The History of *-eer* in English: Suffix Competition or Symbiosis?

Zachary Dukic [1,*] and Chris C. Palmer [2,*]

[1] Department of English, Illinois State University, Normal, IL 61790-4240, USA
[2] Department of English, Kennesaw State University, Kennesaw, GA 30144-5659, USA
* Correspondence: zdukic@ilstu.edu (Z.D.); cpalme20@kennesaw.edu (C.C.P.)

Abstract: Ecological models of competition have provided great explanatory power regarding synonymy in derivational morphology. Competition models of this type have certainly shown their utility, as they have demonstrated, among other things, the relevance of frequency measures, productivity, compositionality and analyzability when comparing the development of morphological constructions. There has been less consideration of alternative models that could be used to describe the historical co-development of suffixes that produce words with sometimes similar forms or meanings but are not inevitably or solely in competition. The symbiotic model proposed in this article may help answer larger questions in linguistics, such as how best to analyze certain multilingual morphological phenomena, including the emergence of semantically similar forms within the same language. The present study demonstrates the importance of a diachronic approach in situations of near-synonymy, as an understanding of semantic similarity necessitates a review of the available historical record. In particular, our study focuses on the case of the suffix *-eer* (e.g., *marketeer*) in English, analyzing its origins, semantics, compositionality, and historical development, including its symbiotic relationship to the similar suffix *-er* (e.g., *marketer*).

Keywords: competition; symbiosis; suffix; derivative; frequency; morphology; borrowing

Citation: Dukic, Zachary, and Chris C. Palmer. 2024. The History of *-eer* in English: Suffix Competition or Symbiosis? *Languages* 9: 102. https://doi.org/10.3390/languages9030102

Academic Editors: Akiko Nagano and Ryohei Naya

Received: 7 December 2023
Revised: 2 March 2024
Accepted: 7 March 2024
Published: 14 March 2024

1. Introduction

It is evident that many linguists—and perhaps morphologists, in particular—have great interest in competition among linguistic phenomena. Morphological competition has been defined as "the inevitable onomasiological pressure to choose between alternative candidate constructions in expressing a certain function" (Leclercq and Morin 2023, pp. 11–12); yet another definition holds that "words that express closely related meanings or grammatical constructions that have closely related functions in discourse are in competition with one another" (Goldberg 2019, p. 142). Competition between morphological constructions has been a topic of considerable debate in recent years (e.g., Štekauer 2017; Fernández-Domínguez 2017; Mattiello 2018; Fernández-Alcaina and Čermák 2018; Smith 2020; Rodríguez-Puente et al. 2022).

It is notable that the word *competition* evokes metaphors of economics or games, which are also apparent in morphological frameworks that study elements such as "profitability" (Bauer 2001) or "rivalry" (Nagano 2023; Huyghe and Varvara 2023). Competition models have been useful in helping morphologists think through the relevance of frequency measures and productivity (Hay and Baayen 2002; Hilpert 2013) and compositionality and analyzability (Lieber 2016; Hippisley and Stump 2016) to the development of morphological constructions. Even so, at times it is beneficial to question our own frameworks' assumptions; occasionally, certain data may demand we do so. In this article, we explore this question: can some derivational affixes be more accurately described using a diachronic approach and the ecological metaphor of symbiosis rather than that of competition?

This paper is structured as follows. Section 2 begins with a brief description of our study, followed by a review of our theoretical framework and competition as an ecological model. The section closes with a literature review of previous work on the

suffix *-eer* and a historical overview of the suffix in English. Our Section 3 elaborates our research process and provides additional relevant information for the study results and data, which were collected from the Oxford English Dictionary (OED) and several corpora at english-corpora.org: the Corpus of Contemporary American English (COCA) (Davies 2008–2024), the Corpus of Historical American English (COHA) (Davies 2010), and the Early English Books Online Corpus (EEBO) (Davies 2017). Any reference in this paper to "dictionary", "definition", "dictionary meaning", or "dictionary definition" are referring to the OED. Section 4 identifies historical changes in the lexical domains, productivity, and decomposability of *-eer* from its earliest uses to the present day. The subsequent Discussion evaluates competition as an ecological model and how it compares to our proposed symbiotic model. Section 6 discusses issues with applying a symbiosis model alongside a competition model. Our Conclusion reiterates our contention regarding the value of symbiosis as complementary to other ecological models of competition in morphology, and we emphasize the importance of diachronic research when working with morphological synonymy (or near-synonymy).

2. Background and Aims

This study presents a diachronic analysis of the *-eer* suffix in English (e.g., *musketeer*), from the earliest attested French borrowings to the status of the suffix in Present-Day English. Based on our data, we argue that there may be richer analyses for certain morphological phenomena if we consider forms as *coexisting* rather than *competing*. This distinction arises from an interpretation of competition that typically situates linguistic phenomena in a sort of marketplace, where *winners* are the productive constructions and the *losers* are not. We consider data on *-eer* through the lens of a competition model, that is, the competition between *-eer* and *-er* in forming agent constructions (e.g., *harpooneer/harpooner* and *orienteer/orienter*), and highlight the limitations of such an analysis. We contend that a symbiotic model can shift the focus of analysis from the pressure to resolve a competition to the dependent or interdependent meaning potential that differentiates near-synonymous constructions. We use "near-synonymous" or "near-synonym" in line with Divjak (2006) and Geeraerts et al. (2023), to indicate "lexemes that are characterized by high similarity and low contrastivity in meaning" (Divjak 2006, p. 21). By "meaning potential" (Hanks 2013), we mean that "meanings are contextually bound" and that the overall understanding of a derivative involves dictionary information (or definitions) in consideration of variable contextual information (p. 66).

2.1. Competition and Symbiosis: Theoretical Background

We adopt a usage-based approach to language as a complex adaptive system and a network model of linguistic storage and processing in which the morphological structure among lexemes is demonstrated via frequent patterns of phonological and/or semantic links (Bybee 1985, 2006, 2010; Tomasello 2005). Our approach also benefits from work in the fields of Construction Grammar (Goldberg 1995; Croft 2001; Goldberg 2019) and Construction Morphology (Booij 2012; Booij and Audring 2018; Booij 2019), wherein the locus of description and analysis for morphological patterns are "constructions" or "systemic pairings of form and meaning" which constitute words or phrases (Booij 2012, p. 343). These "constructions" are not just words but also phrases and idioms that collectively form what has been termed the "constructicon": a "network of interrelated knowledge of language" (Goldberg 2019, p. 145). Although we do not fully adopt Construction Grammar or Construction Morphology as our primary analytical framework, we take insights from these approaches for several of our definitions, including the lexicon and schemas as well as compositionality and analyzability (see Section 3). The lexicon can be defined as a "multidimensional network of relations between words and morphological schemas of various degrees of abstractness" (Booij and Audring 2018, p. 67). Schemas are derived from "sets of complex words that exhibit a certain systematic form-meaning correspondence" (p. 70).

In some types of nominalization processes, such as derivation, polysemy can develop when multiple processes are applicable (e.g., *-eer* vs. *-er* nominalization). Polysemy in semantic theory has "moved from a static conception. . .in which senses are well-defined linguistic units (just like, say, phonemes or morphemes are discrete elements within the structure of a language) to a much more flexible and dynamic view of meaning" (Geeraerts et al. 2023, p. 50). Lieber's (2016) Lexical Semantic Framework informs our view of polysemy in constructions, specifically, that the potential influence of context cannot be understated, especially when dealing with near-synonymous forms. Lieber elaborates the importance of context further: "in the same way that adaptation to multiple environments can happen with organisms, interpretations of [derivatives] may adapt to their sentential and discourse context" (p. 185).

Lieber's (2016) reference to morphemes as "organisms" invites deeper consideration of ecological models of morphological competition. Her metaphor of a derivational ecosystem illustrates how "if we think of morphological types (specific affixes, conversion) as analogous to organisms and readings (agent, location) as analogous to habitats, we can imagine each affix as occupying one or more semantic niches" (p. 57). Ecological models also play a large role in Aronoff's (2023) summative discussion of Gause's (1934) Principle of Competitive Exclusion. Aronoff contends:

> The over-arching property that governs both blocking and elsewhere distribution is competitive exclusion. This top-down property of languages and of all self-organizing systems makes it difficult (though not impossible) for any two morphological patterns or two words to occupy the same niche. Given enough time, one will oust the other. (p. 60)

Such a contention is in line with Goldberg's Principle of No Synonymy: "speakers will not randomly have to choose between two structures with a similar meaning. Instead, a functional differentiation will emerge in which certain *contexts* will lead to the preference of one construction over the other" (Hoffmann 2022, p. 79; emphasis added). In other words, "this principle states that pure synonymy (whereby two linguistic signs serve exactly the same function) does not exist and that any difference in form should entail a difference in meaning" (Leclercq and Morin 2023, p. 2). Ecological models of competition can help us explain how a derivative settles into a semantic niche because no two derivatives can be purely synonymous.

Just like organisms in an ecosystem, the proliferation of one will affect other, similar organisms. Likewise, a high-frequency derivative can affect other near-synonymous forms, with the result being the relegation of such near-synonyms to highly contextual semantic niches.

Variation among near-synonyms in context or across dialects is discussed extensively as a social phenomenon in Geeraerts et al. (2023). They approach synonymy from an onomasiological perspective in which variation among near-synonymous terms can constitute an overlap of meaning, where one term is broader ("*trousers*") than the other ("*breeches*"). But there remains the potential for the terms to be used interchangeably (p. 11). At the individual level, that choice is influenced by a "semantic frame" or "a structured abstraction or idealization of a set of coherent contexts" (Goldberg 2019, p. 12). Regarding the interpretation of individual words, Goldberg argues that "neural areas that relate those words to various actions or perceptions may also be reliably activated, suggesting that our sensory knowledge, whether directly experienced or imagined, is linked to word meanings. . .words evoke rich conceptual and perceptual information gleaned from the contexts in which the words have been witnessed" (p. 13).

Language users "recognize 'semantic niches'" (Hüning and Booij 2014, p. 595) and via "analogical relations" they can recognize new patterns of productivity. A competition model asserts distribution to highly contextual semantic niches as a possible resolution of competing forms, as a competition necessarily implies that one form wins (and remains) while the other loses (and does not). According to Gause's Principle of Competitive Exclusion, "no two species with identical ecological niches can coexist in a stable equilibrium"

(Aronoff 2019, p. 41). As a result, one species will survive and the other will become extinct, unless their ecological niches become distinct enough to reduce or eliminate the competition that occupying "identical ecological niches" presents. This process is referred to as "ecological niche differentiation", that is, when "natural selection drives competing species into different distribution patterns of resource use" (p. 44). When a semantic niche is occupied by more than one affix, then those affixes are said to be in competition.

We use "semantic niche" to refer to the meaning of a construction with regard to both dictionary information and a specific context. Thus, the semantic niche is the contextually specific usage of a construction that determines how the meaning potential of that construction is interpreted. If one has a bucket of wax, there is unlimited *potential* in how it can be molded, but the wax must be poured into a mold (i.e., *context*) to be made into a specific shape (i.e., the *semantic niche*). In other words, the meaning potential is just that—potential—and must be molded by a context to produce a highly specialized semantic niche. For example, a community of speakers may have a shared semantic understanding of a word such as *auction*, whose definition in a particular historical context might be reflected in the OED. And from there the constructions *auctioneer* and/or *auctioner* might also be created within that community and be shaped and differentiated by contextual usage.

A competition model would typically predict the derivative of the more frequent suffix *-er* to be more strongly associated with the general, dictionary definition of the base and the derivative of the less frequent *-eer* suffix to be the form with niche meaning. We suspect a correlation between the more frequent form and the derivative that exemplifies the dictionary definition of the base. In our observations, the *-er* suffix is far more frequent than the *-eer* suffix and much more likely to signal a general, non-niche agentive meaning, e.g., *marketer* 'a person who buys or sells in a market' vs. *marketeer* 'a supporter of Britain's entry into the European Common Market' or 'a person involved in the practice of installing as a short-odds favorite a horse which has no chance of winning a race' (OED). In the unusual case of *auctioneer/auctioner*, though, the typical prediction does not apply: it turns out that the *-er* form has more meaning potential for niche semantics.

In COCA, *auctioneer* is counted 747 times, while *auctioner* occurs once. This single occurrence of *auctioner* is in reference to a satirical text from the 18th century titled *The Compleat Auctioner*[1]. This use of *auctioner* may have been formed on analogy to other *-er* formations in titles of books of this era—in particular, *The Compleat Angler*, a popular text about fishing. The meaning potential differentiating *auctioneer* from *auctioner* ranges from historical or antiquated (perhaps 'an old-fashioned way of saying *auctioneer*' when used in Present-Day English) to satirical (perhaps 'a parody of an auctioneer' or 'a parody of an *-er* form used in the title of a popular book' in 18th-century contexts). These meaning potentials represent possible niches associated with *The Compleat Auctioner* and make *auctioner* distinct from *auctioneer*. In this account, it is not necessary to assume that these derivatives are competing with one another, nor to assume that *-eer* and *-er* are competing for the same base (as if it were a scarce resource). The frequency distribution does not necessarily make *auctioner* or *-er* a "loser" and *auctioneer* or *-eer* a "winner", despite the latter word having a significantly higher frequency.

The case of *auctioneer/auctioner* suggests that niche meaning may be available to either suffix via the contrast between two near-synonymous forms and their relationship to one another in their respective networks of meaning. It is possible for either *-er* or *-eer* to produce a niche meaning in comparison to the other: *auctioner* has a distinct meaning because it both shows a relation to and contrasts with the more general *auctioneer*; *marketeer* receives unique meaning largely because it is connected to and different from the more frequent *marketer*. Thus, both *marketeer* and *auctioner* have developed niche meanings related to the dictionary definition of their bases. In each word's niche context, an evaluative interpretation influences the ultimate meaning of the derivative. Because the meaning of *auctioner* depends on *auctioneer*, and *marketeer* depends on *marketer*, we suggest that the relationship between lexemes in both *-er* and *-eer* may be *symbiotic* rather than competitive: the meaning potential of one or both forms is reinforced by that of the other. From this

perspective, near-synonymous derivatives share dependent meanings, with either suffix having potential to produce a niche distinction.

2.2. Competition and Symbiosis Models of Morphology: A Spectrum

In biology, SYMBIOSIS is defined as "[a] long-term association between two or more organisms of different species" (Moya et al. 2008, p. 218). It is usually separated into three types: PARASITISM (when one species benefits while the other is adversely affected), COMMENSALISM (when one species benefits without affecting the other), and MUTUALISM (when both species benefit) (p. 220).

Bybee and Beckner emphasize that biological models may be quite helpful for understanding linguistic processes:

> In biology, strikingly similar forms or strategies may evolve in different locations or times, among organisms that occupy the same ecological niche. . . Such convergences arise not because of over-arching design or goals, but rather because similar interacting, local processes operate in many environments. . . in biology slight differences in form may arise because initial conditions are not the same or the ecological pressures differ. (Bybee and Beckner 2015, p. 194)

We can visualize this phenomenon in morphology with Figure 1, that is, symbiosis and competition existing on a spectrum. On the far end of the competition side of the spectrum is what we refer to as "hard" competition, meaning that in some models of morphological competition (primarily those concerned with inflection) there is a hard demand for resolution with one beneficiary or winner, in which case the detrimental effect on the loser is its complete (or almost complete) erasure. This is typically when, in Aronoff's (2023) words, "resolution is driven by the existence of inflectional classes" (p. 56). One example of hard competition might be the loss of *-th* as an inflectional marker of the third person singular (e.g., *walketh*) in favor of *-s* (e.g., *walks*) during the Late Middle and Early Modern English periods (Walker 2017). Next on the spectrum is "soft" competition (mostly derivation), a model which assumes a pressure to resolve competition but does not necessarily resolve it completely. An example of soft competition (or at least a less extreme competition than most inflectional examples) can perhaps be seen with *-ity* (e.g., *divinity*), which "grew with the sets of suffixed borrowings from French and Latin, but *-ness* began to dominate with certain borrowed suffixes (e.g., *-ive*). The struggle continues to this day: neither had driven the other to extinction in any morphological subdomain of adjectives" (Aronoff 2023, p. 57)[2].

By "benefit" in Figure 1, we mean that the form is strongly associated with the dictionary definition or that it is relegated to a productive niche meaning, and by "detriment" we mean that the form falls out of use or is confined to a niche meaning with little to no productivity. Competition models assume a resolution to the competition in question, or at the very least a pressure for the competition to resolve (even if it never actually resolves).

However, this lack of resolution does not have to be interpreted as a competition or struggle between two forms. It should be noted that prior scholars who have discussed competition and rivalry at length also acknowledge that affixes might not always be competing once they settle into niches (Plag 1999, p. 227) or stylistically differentiate from one another (Bauer 2001, p. 208). Several studies have also described affixal niche differentiation as quite similar to processes observed in ecological systems (Lindsay and Aronoff 2013; Arndt-Lappe 2014; Aronoff 2016), though these studies frame it as a consequence of competition rather than symbiosis. Aronoff (2023) recognizes two types of competition (i.e., what we term "hard" and "soft" in Figure 1) as accounting for the difference between competition in inflection and derivation. The pressure to resolve either type of competition (i.e., "hard" or "soft") is the assumed impetus for the development of niche distribution.

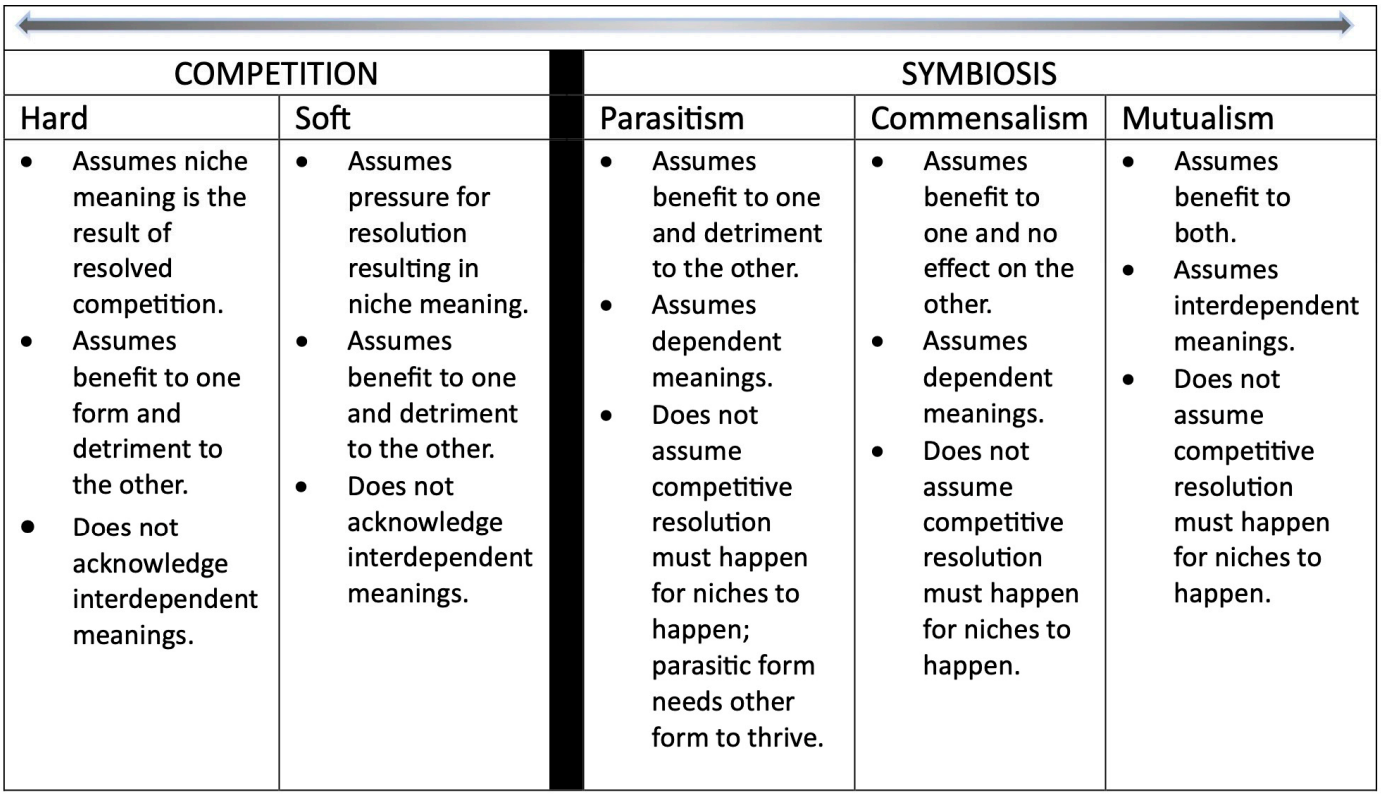

Figure 1. Spectrum of synonymy in morphology.

Our model of symbiosis in morphology (Figure 1) allows for other ecological possibilities than just competition that might explain the development of niching and the lack of resolution. In a competition between suffixes, the two competitors are not understood to have meaning that is dependent on one another, even if the meanings of their derivatives are dependent on the meaning of the shared base. Niche distribution on the symbiosis side of the spectrum is the result of shared meaning, where typically one form exemplifies the dictionary definition of the base and the other, while still associated with the same definition, presents a unique, evaluative interpretation (i.e., a semantic niche). In a symbiotic relationship between suffixes, the respective meanings of the suffixes are in some way dependent on each other. Although the meaning of a shared base also informs the meanings of their near-synonymous derivatives, the ultimate understanding of one derivative's meaning is dependent on the other (or perhaps the meanings are interdependent).

A potential morphological example of PARASITISM could be involved in the particular case of *-ic* and *-ical* (e.g., historic/historical; see Gries 2001; Kaunisto 2007; Lindsay and Aronoff 2013). Lindsay and Aronoff (2013) argue that while *-ic* is a generally more productive form, *-ical* has largely survived by developing a niche in which it is more likely than *-ic* to attach to words with the <-olog-> sequence (e.g., *tautological)*. But it is important to note that there is also an implied dependency between certain *-ic* and *-ical* derivatives. Some uses of *-ical* suggest a strong semantic relationship to *-ic*, particularly in pairings such as *analytic/analytical*. It is possible to see such doublets as developing through a sort of parasitism, where the *-ical* variants can thrive off the back of the emergence of closely related *-ic* formations, or vice versa. (And perhaps the doublets survive because speakers desire free variation or stylistic choice, e.g., *she has an analytic/analytical mind*, where both options might be very close synonyms for some speakers.) Moreover, parasitism might also characterize the relationship between *-ic* and *-al* within such constructions. If *-ical* is not treated as a single morpheme, we can analyze lexemes such as *analytical* as a derivation of an *-ic* derivative (i.e., *analytical* = *analytic* + *-al*, 'pertaining to analytics; taking an analytic approach'). The meaning of the *-al* derivative thus entails the meaning of an *-ic*

derivative—a dependent relationship. If, hypothetically, *-ic* were to disappear, these uses of *-ical* would be likely to disappear as well. Even though *-al* is an adjectivizing suffix like *-ic*, it does not typically compete with it for the same bases: there would probably be no **analytal*. Metaphorically, perhaps, the *-al* in *-ical* sequences "feeds off" of and benefits from *-ic*—a parasitic rather than competitive dynamic that ultimately affects the *-ic* and *-ical* relationship.

COMMENSALISM may perhaps describe certain suffix relationships, such as analogical ones, in which the productivity of one suffix is promoted by another but not necessarily vice versa. The feminine agentive *-ess*, for example, seemed to spread via analogy to words ending in *-er/-or*, such as *governor* (*governess*), *murderer* (*murderess*), and *waiter* (*waitress*) (Marchand 1960, p. 227). In other words, the existence of widespread *-er/-or* derivatives clearly aided the spread of *-ess* for those speakers who wanted to distinguish derivatives with distinct meanings denoting female agency. But it is less likely that *-or/-er* productivity was as dependent on *-ess*. Even so, it is arguable that there could have also been a dimension of MUTUALISM in these suffixes' relationships, since the feminine agency of derivatives such as *murderess* perhaps reinforced a male or non-feminine meaning in *murderer* (and similarly for other *-ess/-er* pairings). For these sorts of derivatives, the interdependent meanings may suggest a sort of mutual suffix co-development rather than competition.

It is thus possible for a morphological process to have both commensal and mutual dimensions. In fact, in biological studies, judging a symbiotic relationship to be either commensal or mutual is not unusual. Studies of symbiosis between frogs and spiders have suggested symbiotic relationships of both commensalism and mutualism (see Dundee et al. 2012; Bascoules and Smith 2021).

It is useful to relate such symbiotic relationships between derivatives to the concept of *meaning potential*, which helps characterize doublets such as *marketer/marketeer*. The more generally understood and frequent use of *-er* contrasts with the meaning potential specified by the semantic niches of *-eer* on the same base (i.e., including specific market contexts such as horse betting and the European Common Market). The meanings of *marketeer* are relevant to the dictionary definition of the base but are not as closely related to that definition as is *marketer*. At the same time, *marketeer* is frequent enough that its evaluative meaning serves as a contrast to that of *marketer*. It is then reasonable to suggest that the meaning of *marketer* as the agent derivative that more explicitly coincides with the definition of the base *market* is perhaps strengthened by its contrast to the highly contextual and specific meanings of *marketeer*.

It could therefore be argued that the relationship between *-eer* and *-er* is *mutual*: there is an interdependence between these derivatives and their suffixes based on their related meanings. Alternatively, one could instead argue that a *commensal* relationship is likely, perhaps based on differences in frequency: *marketer* appears much more often in COCA (1287 occurrences) than does *marketeer* (71 occurrences). From this perspective, one might conclude that *marketeer* is far more affected by *marketer* than vice versa—that the dictionary definition of *marketer* is due mostly to common usage rather than to contrast with *marketeer*.

Whether such a case is interpreted as either mutualism or commensalism, the key point is the same: there is a dependent relationship in the meaning of many *-er* and *-eer* derivatives. And it is the network of *-eer* usage (i.e., derivatives) that makes the symbiotic relationship with the *-er* suffix possible. In subsequent sections of this article, we will demonstrate how historical data help us better understand the diachronic development of this network and the symbiotic connections between *-er* and *-eer*.

The spectrum proposed in Figure 1 is meant to illustrate the importance of competition models alongside other potential interpretations of near-synonymous forms (i.e., symbiosis or coexistence). As Aronoff (2023) points out, there are different types of competition (e.g., inflectional vs. derivational), and we argue that further diversifying this perspective with types of symbiotic relationships potentially allows for a wider range of descriptive analyses of morphology. It is our contention that the developmental relationship between near-synonymous forms, such as the *-eer* and *-er* nominalizing suffixes in English, can be more

thoroughly described by acknowledging possibilities other than competition as the sole method of comparison. More specifically, we argue that a state of symbiotic coexistence between suffixes may be a more apt description of certain morphological phenomena because sometimes in language there is no clear winner or loser.

2.3. Previous Studies of -eer

The OED includes a brief discussion of the suffix *-eer* focusing on its early history, orthographic variation, and key terminology. Marchand (1960) provides an early analysis of its usage. Bauer et al.'s (2013) *Oxford Reference Guide to English Morphology* and Lieber (2016) discuss both the characteristics of the suffix and cases of morphological competition. To our knowledge, there does not exist a fuller account of *-eer*, a point acknowledged by Lieber (2016): "there is less theoretical discussion of personal affixes. . .and virtually none of exotic nominalizations in *-eer, -ster*, or *-meister*" (p. 4).

The OED identifies *-eer* as the anglicized version of the French suffix *-ier* used to form agent nouns. It also makes note of the Dutch suffix *-eren* realized as *-eer* in English in very specific words such as *domineer* and *commandeer*. According to the OED, certain words formed with *-eer*, such as *crotcheteer* and *pamphleteer*, involve a "contemptuous implication", and the spelling variant <*-eer*> became more frequent in new words than the French <*-ier*> during the 17th century, a contention corroborated by our corpus data. One impetus for this may have been due to the increased promotion of English as a language of educated discourse during the 16th and 17th centuries (Kibbee 1991, p. 108). Further corroborated by our data, the OED identifies the 17th century as the period when gerundial and participial forms appeared (e.g., *privateering*, attested 1678; and *volunteering*, attested 1691).

Marchand (1960) states that *-eer* is derived from the French *-ier*, initially brought into English via French military terms: from there "the idea of battle was extended to that of literary and oratory 'battles'" (p. 211). However, Marchand's contention that the suffix originated from French military terminology borrowed into English is unlikely. As is further discussed in our Section 4, although French military terminology was in use, French borrowings in the domain of TRADE are likely where the first high-frequency tokens of *-eer* occurred in English.

The Oxford Reference Guide (Bauer et al. 2013) provides a thorough examination of the phonetic environment of *-eer* in English. Grouping it with the suffixes *-ster* and *-meister*, the authors acknowledge that it has "an extra evaluative nuance along with agentivity" (p. 225). The authors further indicate what is "most striking" about these suffixes is "the degree of polysemy that they exhibit, and the extent to which their domains overlap with one another" (p. 230). This "extra evaluative nuance" has been more explicitly described as one way to think about a semantic niche in an ecological competition. Bauer et al. (2013) contends that "because of already existing forms like *musketeer*, *buccaneer*, and *cannoneer*, *-eer* has sometimes come to suggest someone who not only performs an action, but does so in a warrior-like way" (p. 235).

Similarly, Lieber (2016) characterizes *-eer* as having an "evaluative flavor" (p. 146) that conveys a nuance of "playful (as in the case of *brisketeer*)" yet "sometimes slightly disparaging (as in *budgeteer* and *conventioneer*)" contest (p. 150). We appreciate Lieber's description of *-eer* being on some sort of spectrum where alternate possibilities ("playful" and "disparaging") are identified. This sort of variable potential in the meaning of *-eer* derivatives is an important part of the network of *-eer* usage. Such a network is not delineated by rigid semantic boundaries between domains but rather constituted by a variety of niches that enrich the meaning potential of the suffix.

2.4. The Status of French in Medieval and Early Modern England

The year 1066 is acknowledged by most "to mark the beginning of the massive impact of French on English" (Rothwell 2001, pp. 539–40). The influence of French on the English population was notable by the 12th and 13th centuries, when "French terms [were] infiltrating even the common language" (Kibbee 1991, pp. 23–24). In the 12th

century and following, the literate and working classes began to combine French bases with English affixes and vice versa. For example, one record in 1383 indicates payment for a boat's "calfattyngge" (i.e., 'waterproofing'), combining a French base with an English suffix (Rothwell 1998, p. 163). And in the early 1400s, the London Grocers were using hybrid words such as *wharfage* and *cranage*, each composed of an English base with a French suffix (Palmer 2008, p. 248). The centuries-long, constant influx of French terminology influenced the derivational morphology of English, resulting in the loss of some productive affixes from Old English and the inclusion of some French affixes (Dalton-Puffer 1996; Palmer 2009; Roth 2010). One of these "new" affixes of French origin was *-eer*, which can be found affixed to native English words as well as Romance borrowings in Present-Day English. The French suffix is orthographically distinct (i.e., <*-ier*>; e.g., *cashier*). During the Middle English period, the orthography of the suffix appears to have been in free variation. However, over time, derivatives of the <*-eer*> form became more frequent, while derivatives of the <*-ier*> form were remitted to certain high-frequency terms (e.g., *financier*).

The French language persisted in trade and continued to dominate the legal system until the 18th century (Kibbee 1991, p. 58). During the 14th century, merchants and craftsmen from Flanders arrived in England, restrengthening French as a major language of trade, although they had to navigate the conflicts arising from The Hundred Years' War, essentially a trade war, with England and France fighting over, among other things, the lucrative wool trade (p. 61). Among English merchants, French was at the top of the list of languages to know due to its being the language of England's most significant trading partner (p. 101). Despite the prominence of English in literature and as an administrative language during the 16th century, French "retained a prestige value" (p. 185), though its use in England and its continuing effect on English is less clear post-16th century. Even so, this evidence of sustained historical contact between French and English, particularly related to wars and international business, likely explains why we see more development of *-eer* in the domains of TRADE and MILITARY.

3. Methods

Our study analyzes *-eer* and *-ier* lexemes from the OED and the three corpora previously mentioned: COCA, COHA, and EEBO. Our approach combines corpus data with lexicographic analysis, similar to Smith (Forthcoming), who contends that "lexicographic sources [are] an asset as a preliminary step to assess potential classification of senses, but we know that semantic and morphological behaviour is not limited to the lexeme but is context-dependent" (p. 4). After reviewing all relevant forms in the OED, we utilized the corpora to determine frequency measures and make conclusions regarding parsability and analyzability.

In this paper, the suffix is represented with the spelling <*-eer*>. Unless otherwise noted, this spelling will represent both <*-eer*> and <*-ier*> forms because in some cases the suffix has retained the French spelling <*-ier*> in English (e.g., *bombardier*). In varieties such as American English, both spellings are often phonetically realized as [i(ə)r], which is why one spelling variant will be used to refer to both, similar to Marchand (1960), who reviewed terms such as *cannoneer* and *bombardier* together because "for some time *-eer* varied with the form *-ier*" (p. 211). In our study, a "type" refers to a particular base + the suffix *-eer*, whereas the "tokens" are the orthographic or other variations of each distinct type. For example, <*enginier*>, <*enginiere*>, and <*engineer*> are all treated as tokens of the type *engineer*.

Despite prior work on *-eer*, questions remain: Why does *-eer* remain in use even though the derivative type frequency is dwarfed by the far more common *-er* derivative type frequency? Is there some semantic significance attributable to the *-eer* suffix which is not associated with the *-er* suffix? How can morphological competition regarding *-eer* be described when a win/lose resolution is not the clear or in-progress result?

From this realization, we designed the present study to provide a historical overview of the emergence and maintenance of *-eer* usage in English, including a discussion of its status as a supposed competitor to the nominalizing suffix *-er* in Present-Day English. The

corpora used to construct this historical overview present different types of data. COCA includes a vast sample of American English from contemporary sources, such as the news or the internet, from 1990 to 2019, while COHA includes historical American texts from as early as the 1820s and the EEBO corpus consists exclusively of British English texts from the 15th century to the late 17th century. These databases show that *-eer* had small but consistent usage and productivity across registers and genres. Our domains categorize the tokens accordingly, and through our diachronic approach, it is evident that the use of *-eer* derivatives spans across genres and is not specific to any particular portion of the corpora (see Tables 1 and 2, where an "X" indicates no types were found within this domain in this period).

Table 1. Phase 1 domain frequencies of *-eer* types from the OED.

Domain	Period 1	Period 2	Period 3	Period 4
TRADE	11	4	8	10
MILITARY	X	1	17	15
POLITICAL	X	X	X	6
RELIGIOUS	X	1	X	8
ART	X	X	X	4
MISCELLANEOUS	X	1	4	9
FOOD	1	X	X	X

Table 2. Phase 2 domain frequencies of *-eer* types in the OED.

Domain	Period 5	Period 6	Period 7
TRADE	8	15	17
MILITARY	6	8	5
POLITICAL	3	8	8
RELIGIOUS	1	1	X
ART	2	6	2
MISCELLANEOUS	6	10	3
FOOD	1	4	1

Types of *-eer* derivatives were identified by manually sorting through listings in the OED. In this study, we utilized the OED in two ways: as a historical analytical tool to help us track neologisms and their potential meanings; and as a source for definitions of lexemes that we assume reflect, or at least approximate, the mental lexicons of communities in earlier eras. Any data related to the more frequent nominalizing suffix *-er* were likewise drawn from the OED. Hand-sorting through the data was a necessary approach due to the very limited quantity of *-eer* derivatives and some exceptional cases that required specific attention to their analyzability and compositionality (i.e., *pioneer*).

Analyzability refers to the degree to which the parts of a given construction can be discerned (Langacker 1987; Bybee 2010; Traugott and Trousdale 2013). For example, the word *teacher* is easily parsable as *teach* + *er*. Compositionality, a semantic measure, is concerned with the contribution of the parts of a construction to the overall meaning. Again, focusing on the construction *teacher*, both parts of the word are clearly definable as the act of teaching plus an agentive suffix. The productivity of a suffix is intrinsically linked to the relationship between the frequencies of a base and a derivative, which demonstrate the decomposability of a derivative: "the more often a base (such as *pass*) appears relative to its derivative (*passage*), the easier it is for speakers to parse the derivative as two morphologically distinct units (*pass* + *-age*)" (Palmer 2015, p. 110).

The OED acknowledges many spelling variations for the suffix *-eer* throughout the Middle and Early Modern English periods. The variations include: <*ier*>, <*yer*>, <*eere*>, <*eir*>, <*eyer*>, <*yere*>, and <*iare*>. During the 17th century, the spelling of *-eer* derivatives stabilized around the modern spelling <*-eer*>, with a few exceptions[3] (e.g., *cashier, financier, chocolatier*, and *motelier*). Tokens with further suffixation in addition to the *-eer* suffix (e.g., *volunteering*) were not counted as part of the data set[4]. Duplicates of a lexeme in a different part of speech (e.g., *volunteer* V and *volunteer* N) were counted once and allocated to a domain according to the earliest attestation in the OED. If such duplicates had multiple definitions, then they were counted once for each distinct definition and cross-listed in the respective domains. For example, *parliamenteer* (1. 'a person, esp. a soldier, on the side of Parliament during the English Civil War'; 2. 'a Member of Parliament') is listed in the MILITARY domain for definition 1 and the POLITICAL domain for definition 2[5].

For collection of *-eer* types, we identified all derivatives of the suffix from the OED, using the first appearance of the form to establish a general chronology. Token frequencies were measured using COCA, COHA, and EEBO. We divided our data into two sets, Phase 1 (1300–1699) and Phase 2 (1700–1999). These sets were further divided by century: Phase 1 was divided into four periods and Phase 2 was divided into three periods. Derivatives from what we term Phase 0 (1100–1299) were counted as tokens but omitted from the century-by-century analysis due to the dearth of data—only four types (i.e., *woodyer*, attested 1100; *lockyer*, attested 1221; *hellier*, attested 1275; and *bowyer*, attested 1297). Our data from each period were categorized by the following domains: TRADE (73 types), MILITARY (52 types), POLITICAL (25 types), RELIGIOUS (11 types), ART (14 types), MISCELLANEOUS[6] (33 types), and FOOD (7 types).

4. Results

4.1. Domains and Type Frequencies of -eer in the History of English

As we will show, most *-eer* derivatives are obviously parsable (due in part to the high frequencies of the derivatives' bases). The continuity of *-eer* derivations up to the present day suggests that *-eer*, like *-er*, has maintained a level of perceived productivity, even though *-eer* derivatives are far less frequent than those with *-er*. Moreover, the diversification of the domains of use for the *-eer* suffix indicates a mostly consistent productivity over time.

4.1.1. Phase 1 (1300–1699)

The derivational suffix *-eer* entered the English language through borrowed French terms initially. Over time, French borrowings became more compositional as "their growing numbers. . .[reflected] nativisation **of part of** the loan-words. . . [T]owards the end of the [1400s] they could just as well be analysed as formations of the native *-ere*" (Dalton-Puffer 1996, p. 138; bolding added). During the Middle English period, of the domains we identified (i.e., MILITARY, RELIGIOUS, POLITICAL, FOOD, TRADE, ART, and MISCELLANEOUS), the highest type and token counts occurred in the TRADE domain. This finding contradicts Marchand's (1960) contention that the suffix originated from borrowings of military terminology. That is, the majority of terms and the highest-frequency terms referenced craftsmen or those who handle raw materials as well as those who buy, sell, and steal (e.g., *lockyer*, attested 1221; *furrier*, attested 1330; *rippier*, attested 1384; and *ropier*, attested 1440). During this period, there was only one MILITARY type identified. In the following century (1500–1599), there was a substantial increase in the quantity of MILITARY types as well as an increase in individual token frequencies.

All *-eer* derivatives are nouns prior to the 17th century. During the 1600s, we begin to see adjective and verbal derivatives. The suffix begins to demonstrate more applicability in the English language, having adjectival and verbal potential in addition to nominalizations during and after the 17th century. This is, in part, why we separated our lists at this point, because after the 1600s, adjectival and verbal constructions remain consistent[7].

Phase 1 is divided into Period 1 (1300–1399; 12 types), Period 2 (1400–1499; 7 types), Period 3 (1500–1599; 29 types), and Period 4 (1600–1699; 52 types). The quantity of distinct

types per domain is given in Table 1. For both Tables 1 and 2, the domain type frequencies are derived from the earliest attestations of the *-eer* suffix provided by the OED. Period 1 almost exclusively contains constructions in the domain of TRADE, demonstrating the importance of French as a language of trade and commerce. Period 2 contains the lowest quantity of derivatives but still includes a majority of types in the TRADE domain. Period 3 primarily contains types from the MILITARY domain as well as some in the TRADE domain and a few in the MISCELLANEOUS domain. As pointed out by Marchand (1960), a high quantity of terms from the MILITARY domain were borrowed from French, but according to our data, this was only after and alongside a high quantity of borrowings from the domain of TRADE. Period 4 contains a more eclectic blend of types from across all domains (except FOOD). In this period, we see significant diversification of the domains in which the *-eer* suffix can be found.

4.1.2. Phase 2 (1700–1999) and Data Type Frequencies

Phase 2 is divided into Period 5 (1700–1799; 27 types), Period 6 (1800–1899; 52 types), and Period 7 (1900–1999; 36 types). The quantity of types per domain is given in Table 2. Types across these periods remain diversified.

To gain one account of changes in the relative productivities of *-er* and *-eer* in later centuries compared to earlier ones, we adapted a method from Bauer (2001, pp. 184–85). This can be seen in Table 3, which shows the percentage of new derivatives in *-eer* out of the total number of new derivatives in either *-eer* or *-er* in each century. There is a notable increase in the number of types in *-eer* relative to *-er* types in the 17th and 18th centuries, suggesting a historical peak in overall *-eer* usage relative to *-er*. This "aggregating" growth (Cowie and Dalton-Puffer 2002; Palmer 2015) of new forms in *-eer* demonstrates that for several centuries the suffix was productive, with a peak in productivity from Periods 4 to 6 (the 17th century to the 19th century). Orthographically, the type frequency of <*-eer*> derivatives overtakes that of <*-ier*> type derivatives in Period 4 and continues through Period 7. The type frequencies of <*-eer*> and <*-ier*> derivatives are given in Table 4.

Table 3. Percentages of new *-eer* derivatives (out of total *-eer* and *-er* derivatives) per century in the OED.

1100–1199	1200–1299	1300–1399	1400–1499	1500–1599	1600–1699	1700–1799	1800–1899	1900–1999
12.5%	3.1%	3%	1.1%	2.1%	3.9%	4.8%	2.7%	3.6%

Table 4. Type frequencies of <*-ier*> and <*-eer*> derivatives in the OED.

Orthography	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7
<*-eer*>	1	0	8	37	22	33	28
<*-ier*>	11	7	21	15	5	19	8

The numbers given in Table 3 indicate the percentage of *-eer* derivatives in the overall count of derivatives of both types (*-eer* and *-er*) in a given century. The first century given (1100–1199), with only eight *-er* derivatives and one *-eer* derivative, is skewed compared to the rest due to its low quantity of derivatives. The remaining percentages indicate a statistically significant peak[8] in the 18th century in the proportion of *-eer* to *-er* usage, coinciding with increased <*-eer*> spelling and consistent adjectival and verbal forms.

As is evident from the tables of data on *-eer* above, its lexical domains and its orthographic representations have changed over time; and its productivity and use relative to the suffix *-er* has remained fairly steady in most centuries, though with somewhat significant increases in the 1600s and 1700s. Such a diachronic perspective is valuable for filling in lesser-known details and linguistic descriptions of a suffix's origins and growth—all of which are important for understanding the "ecological environments" in which that

suffix coexisted with other suffixes. This history can then better inform discussions of the compositionality and analyzability of its derivatives, topics which will be explored in the next section.

4.2. Compositionality and Analyzability of -eer

In the 17th century, we begin to see more consistent orthography as well as adjectival and verbal constructions (e.g., *volunteer* ADJ, attested 1662; and *privateer* V, attested 1691). Most of the early attestations are compositional (e.g., *bowyer*, attested 1297; and *sawyer*, attested 1350), while some are not (e.g., *rippier*, attested 1384; and *besognier*, attested 1584). But after the 17th century, all types are analyzable and compositional with a few exceptions[9].

Table 5 provides the percentages of compositional *-eer* derivatives in each century. The first two centuries only have four types between them, which is why those figures are notably different from the rest. From 1300 to 1999, the average percentage of compositional *-eer* derivatives is approximately 89.3%, and from 1600 to 1999 it is approximately 93.1%. Across all centuries after 1299, it is evident that in any one of the periods there is a very high probability that a given *-eer* derivative is compositional and potentially analyzable by speakers.

Table 5. Percentages of compositional *-eer* derivatives per century in the OED.

1100–1199	1200–1299	1300–1399	1400–1499	1500–1599	1600–1699	1700–1799	1800–1899	1900–1999
100%	66.6%	91.7%	71.4%	89.7%	92.3%	96.3%	86.5%	97.2%

To illustrate this trend, examples of types from each period are provided in Table 6. Below each type is the first attested date according to the OED. Space constraints require that we only discuss a sample of the types from our data. These sample types were chosen because of the frequency of their respective bases as both common (e.g., *pan*) and uncommon (e.g., *petard*) terms in English. Due to the dearth of data, types from Phase 0 are omitted.

Table 6. Sample types of *-eer*.

14th Century	15th Century	16th Century	17th Century	18th Century	19th Century	20th Century
pannier (1300)	*hosier* (1403)	*pioneer* (1517)	*ballistier* (1609)	*auctioneer* (1708)	*cabineteer* (1810)	*profiteer* (1912)
furrier (1330)	*sievier* (1440)	*staffier* (1524)	*petardier* (1632)	*consortier* (1728)	*bludgeoneer* (1852)	*imagineer* (1942)
clothier (1362)	*ropier* (1440)	*musketeer* (1590)	*covenanteer* (1660)	*phaetoneer* (1795)	*animalier* (1884)	*motelier* (1959)

The types from Table 6 are given in Table 7 with their respective token frequencies from EEBO, COHA, and COCA, and the same are provided for the corresponding bases in Table 8, with all frequencies normalized to the number of occurrences per 100 million words. An "X" indicates that there were no occurrences of the base or derivative in the respective corpus, even if the derivative has been attested in the OED, since this provides a snapshot of how much usage the derivatives and their bases were actually enjoying in historical, written language contexts.

Table 7. Sample tokens: derivative frequencies per 100 million words.

Derivative (Century First Attested)	EEBO	COHA	COCA
pannier (14th)	11.39	13.05	8.19
furrier (14th)	5.56	27.00	14.08
clothier (14th)	52.05	24.42	15.57
hosier (15th)	17.08	3.58	2.50
sievier (15th)	0.13	X	X
ropier (15th)	0.26	X	0.10
pioneer (16th)	4.37	866.05	744.20
staffier (16th)	0.13	X	X
musketeer (16th)	1.32	13.68	20.67
ballistier (17th)	X	X	X
petardier (17th)	1.99	X	X
covenanteer (17th)	1.85	X	X
auctioneer (18th)	0.79	178.72	74.58
consortier (18th)	X	X	X
phaetoneer (18th)	X	X	X
cabineteer (19th)	X	0.21	X
bludgeoner (19th)	X	X	X
animalier (19th)	X	X	0.30
profiteer (20th)	X	18.95	11.78
imagineer (20th)	X	0.21	0.90
motelier (20th)	X	X	0.10

Prior studies, such as Hay and Baayen (2002); Hay (2003); Palmer (2015), have demonstrated that when a base shows a much higher relative token frequency compared to a derivative of that base within a corpus, this means that it likely would have been easier for speakers to parse the derivative. In the case of BASE + *-eer* types, high ratios of bases to *-eer* derivatives would aid speakers' recognition that the base and *-eer* suffix are morphologically distinct units. Hay (2003) has also shown that the high parsability of a derivative tends to correlate with the transparency of the base and suffix and may be one cause of its compositionality and productivity. While we cannot assume that highly parsable tokens will automatically become compositional, we wanted to explore whether the parsability of *-eer* tokens historically might be at least a partial explanation for its very high number of compositional forms, as seen in Table 5, particularly after the 1400s.

In Table 7, derivative examples from later centuries are significantly less frequent across the corpora, while their respective bases (some of which are first attested in the Old English period, indicated by "pre-11th" in the first column of Table 8) are very frequent. This may indicate a stronger likelihood of compositionality, since the base within the derivative would be more likely to be recognized as a distinct unit with the addition of a suffix. These high base frequencies may have thus made it easier for speakers to see that *-eer* was a distinct, separable suffix that could attach to a variety of existing but also new bases.

Table 9 shows the base-to-derivative ratios of the frequencies provided in Tables 7 and 8. The question mark "?" indicates an indeterminate parsability: there are no occurrences of the base or derivative in the corpus. Maximum parsability is indicated with "MAX", meaning that the derivative does not occur in the corpus, only the base occurs, suggesting that any derivative of such bases would have a high likelihood of parsability. Following

the method outlined in Palmer (2015), a number greater than 1 suggests parsability, while a number less than 1 suggests less likelihood of parsability. For example, the least parsable token is *pioneer*, with ratios at or near zero in each corpus. Because *pioneer* has a very infrequent base, *pion*, perhaps unrecognizable in COCA (the corpus containing present-day data), it is no surprise that it is also one of the least compositional lexemes in *-eer* among our data[10].

Table 8. Sample tokens: base frequencies per 100 million words.

Base (Century First Attested)	EEBO	COHA	COCA
pan (pre-11th)	1678.24	2179.64	2686.07
fur (14th)	210.97	2368.68	923.11
cloth (pre-11th)	2752.30	3059.58	1323.07
hose (13th)	450.81	730.06	554.21
sieve (pre-11th)	96.15	133.04	97.54
rope (pre-11th)	612.39	2655.19	1422.21
pion (17th)	0.40	X	X
staff (pre-11th)	759.66	6363.57	10,953.65
musket (16th)	266.99	403.34	83.57
ballista (pre-11th)	1.59	2.32	3.59
petard (16th)	29.14	22.52	14.98
covenant (13th)	15,115.12	501.86	589.85
auction (16th)	31.52	601.01	1022.55
consort (16th)	551.47	181.46	79.57
phaeton (16th)	116.94	72.00	10.18
cabinet (16th)	485.51	3249.05	1781.03
bludgeon (18th)	X	53.89	32.95
animal (14th)	2268.64	6835.12	5828.21
profit (14th)	6501.58	3492.40	2911.41
imagine (14th)	4405.64	6315.37	8501.30
motel (20th)	X	609.85	832.86

A review of Table 9 shows that the derivatives first attested in earlier centuries are generally less parsable than the later tokens due to the fact that the bases of words ending in *-eer* in more recent centuries are relatively much more frequent than their derivatives compared to earlier base–derivative pairs. The larger quantity of numerically high (often in the many thousands) and MAX base–derivative ratios from later centuries may be a partial explanation of why *-eer* compositionality remained high and even increased in later centuries and why its productivity has remained steady. If *-eer* increasingly attached to words whose bases occurred in high frequencies, those high base frequencies facilitated morphological parsing of *-eer* words.

In sum, our historical investigation in Section 4 finds that the vast majority of *-eer* derivatives across all centuries are compositional, although the suffix was not always analyzable when it first began to appear in English as a part of French borrowings. The compositionality and analyzability of the *-eer* suffix is an important consideration in the analysis of the network of *-eer* derivatives. They have been shown to be less frequent than derivatives in similar networks historically, as seen in Table 3 with *-er*. Even so, compared to other borrowed nominal suffixes, such as *-ity* (e.g., *alacrity* and *unity)* and *-tion* (e.g., *nation* and *proportion*), which have historically low decomposability (Palmer 2015, p. 126), *-eer's*

analyzability remains quite high over many centuries. Our analysis shows that, despite having lower overall token and type frequencies compared to *-er* in every century, the *-eer* suffix has remained steady or even grown in productivity over time in several lexical domains, especially in niche constructions. One reason the suffix remains in use may be its sustained, high decomposability (which facilitates neologism and usage across a range of bases) as well as the semantic distinctions which are made possible by its niche distribution.

Table 9. Base–derivative ratios.

Derivative (Century First Attested)	EEBO	COHA	COCA
pannier (14th)	147.35	167	328.1
furrier (14th)	37.93	84.6	65.57
clothier (14th)	52.88	125.29	84.95
hosier (15th)	26.39	204	222.04
sievier (15th)	726	MAX	MAX
ropier (15th)	2312	MAX	14,245
pioneer (16th)	0.09	0	0
staffier (16th)	5736	MAX	MAX
musketeer (16th)	201.6	29.48	4.04
ballistier (17th)	MAX	MAX	MAX
petardier (17th)	14.67	MAX	MAX
covenanteer (17th)	8152.21	MAX	MAX
auctioneer (18th)	39.67	3.36	13.71
consortier (18th)	MAX	MAX	MAX
phaetoneer (18th)	MAX	MAX	MAX
cabineteer (19th)	MAX	15,434	MAX
bludgeoner (19th)	?	MAX	MAX
animalier (19th)	MAX	MAX	19,458.67
profiteer (20th)	MAX	184.33	247.13
imagineer (20th)	MAX	30,000	9461.11
motelier (20th)	?	MAX	8342

5. Competition, Symbiosis, and the Historical Development of *-eer*

5.1. The Ecological Model of Competition in Morphology

Dalton-Puffer (1996) provides an overview of the semantics of *-er* as including (a) "someone who Vs now/habitually/professionally", (b) "someone habitually/professionally connected with N", (c) "someone who is A where A denotes a long term quality", and (d) "formation of inanimate agents" (pp. 138–39). The suffix *-eer* can also be used in these senses, albeit with a smaller number of different bases and, overall, fewer token frequencies compared to *-er*, e.g., (a) *auctioneer*, (b) *engineer*, (c) *mountaineer*, and (d) *eyeleteer*. Of the 215 types of *-eer* derivatives, 140 have *-er* alternates attested in either the OED or COCA. Of these, some are simply misspellings, others have a completely different definition, and many are proper nouns (mostly surnames). If there is a frequency-based "competition" between *-er* and *-eer*, it seems obvious that the winner is *-er*, with over 7000 derivatives listed in the OED compared to 215 derivatives for *-eer* in our data set. So, what happens to the loser? To avoid "extinction", affixes in competition must become distinct, "and semantics is as good a differentiator as any" (Aronoff 2019, p. 56).

Lexical blocking (Aronoff 2023) and pattern blocking (e.g., the productive pattern of *-er* nominalization discouraging or disallowing *-eer* nominalization) are not useful for this

question of competition. From a diachronic perspective, lexical blocking cannot be a sufficient explanation for differences in these frequencies because it cannot fully explain why *-eer* often attaches to bases in extant derivatives with *-er*. Some of the earliest attestations of *-er* forms predate their *-eer* alternatives (e.g., *ballader*, attested 1595; *balladeer*, attested 1714; *conventicler*, attested 1457; *conventicleer*, attested 1647). And attestations within the past century corroborate our assessment in Section 4 of the continued productivity of the *-eer* suffix in more recent times (e.g., *imagineer*, attested 1942; and *missileer*, attested 1960). It is possible that the *-eer* forms were blocked for a few centuries by the dominance of *-er*, but this cannot be seen from the overall diachrony as complete blocking.

Just like in an ecosystem, the existence of one dominant organism does not mean that the survival of all similar species will be "blocked" or jeopardized: "If we substitute *affix* for *species*, and we look at the competition between affixes as a competition for resources the parallels are striking. . . Gause's [principle of competitive exclusion] is especially helpful in understanding the distribution of competing affixes into distinct niches" (Aronoff 2023, pp. 55–56). With regard to the potential *competition* between *-eer* and *-er*, the "resources" being competed for are bases on which a semantically unique derivative can be formed. However, some bases can receive multiple competing affixes, resulting in derivatives of very similar form and meaning. Despite such similarity, these derivatives can be distinct from one another through highly specific contexts. An ecological model of morphological competition suggests that *-eer* suffixation is a niche derivational process in competition with the most frequent nominalizing derivational process, suffixation with *-er*. Thus, within a competition-based model, the niche semantics attributable to *-eer* derivatives are assumed to be the resolution of this competition (applicable to what we term "soft" competition in Figure 1). That is, the resulting niches are the reason why the *-eer* suffix has not become obsolete.

A competition model recognizes niche differentiation only as the result of the pressure for resolution of competing forms. But could niche differentiation instead constitute the continuation of symbiotic coexistence? Consider, for example, whether there is a semantic difference between the suffixes *-eer* and *-er* in constructions such as *harpooneer* and *harpooner*. There must be some distinction, according to the Principle of No Equivalence, that is, "If two competing constructions differ in form (i.e., phonologically, morpho-syntactically or even orthographically), they must be semantically, pragmatically and/or socially distinct" (Leclercq and Morin 2023, p. 10). In COCA, there are 22 entries for *harpooneer* and 33 entries for *harpooner*. The *-er* derivative is attested more recently (2019; the most recent *harpooneer* entry is from 2012) and occurs more often and in a more diverse range of contexts focusing generally on sailors and the use of harpoons. It may be tempting to view these derivatives as variants of the same construction given their similar frequencies; nevertheless, the corpus data demonstrate that these two forms are used in slightly overlapping but still distinct ways.

The 33 entries for *harpooner* in COCA are from a diverse range of topics (e.g., alligator hunters, controversies on the use of harpoons, indigenous hunting methods, and some references to *Moby Dick*)—all of which demonstrate the OED definition of 'one who hurls or fires a harpoon'. Though the *-er* derivative can be used in discussions of *Moby Dick*, it does not exclusively relate to the novel like *harpooneer* does. The *-eer* derivative seems to suggest 'one who hurls or fires a harpoon *in a Melvillian sense*'. Of the 22 entries for *harpooneer* in COCA, 2 are from a 2012 blog which discusses Herman Melville's *Moby Dick*, one of which is shown in (1) (bolding added). The other 20 are excerpts from a relatively new abridged version of *Moby Dick* produced in 2009 by Damion Searls, examples of which are provided in (2) (bolding added).

(1) "Ishmael gives us a detail of whaling practice. . .the **harpooneer** throws both harpoons into the whale." (Davies 2008–2024, BLOG; Moby-Dick Big Read, Day 63; patell.org)

(2) "Avast there, avast there, Bildad, avast now spoiling our **harpooneer**. . .Pious **harpooneers** never make good voyagers". (Davies 2008–2024, FIC: Review of Contem-

porary Fiction, vol. 29, Iss. 2, p. 15, 330 pgs; HERMAN MELVILLE or The Whale; Damion Searls)

These recent sources demonstrate that the *-eer* derivative is distinct from the *-er* derivative: these writers did not always freely vary the use of *harpooner* and *harpooneer* but always chose the latter form to implicitly express an evaluation of *harpoon* connected to Melville or Melville's harpooning characters. This case is potentially an example of commensalism, since *harpooneer* is essentially a more specific version of the more frequent *harpooner* but not vice versa (unless one argues that the non-stylistic, more generalized sense of *harpooner* is derived in part from its semantic contrast to *harpooneer*, in which case mutualism may be involved).

Examining the historical data on *-eer*, we agree with its general characterization as an agentive suffix with "extra evaluative nuance", as seen in the case of *harpooneer*. But we differ from Bauer et al. (2013) on identifying the suffix's primary nuances. There are not many types in our data that corroborate Bauer et al.'s (2013) speculation that the addition of *-eer* supplies a "warrior-like" meaning as a general characteristic to constructions outside the MILITARY domain. This is not to suggest that such a meaning could not occur, but if it did, then it would be an extremely contextual instance and likely not a general pattern in *-eer* derivatives. We certainly would not suggest a "warrior-like" meaning for *brisketeer* or *strumpeteer*, nor would we suggest a "playful" or "disparaging" meaning, as suggested by Lieber (2016), for *harpooneer* or *marketeer*.

An important observation here is that over *-eer's* many centuries of use, even as it might have competed with similar agentive suffixes like *-er*, it has not settled into a single niche meaning. It has not even settled into a narrow or fully predictable set of niches. And its relationships with similar suffixes' networks of meaning are often quite complex, as seen in the niche meaning of *harpooneer* having semantic overlap with *harpooner* but also distinction from *harpooner*'s other (non-Melville-related) meanings. The meanings of *harpooner* and *harpooneer* do not fit into neatly delineated boundaries of differentiation. There is an overlapping broad (*harpooner*) and slightly more specific (*harpooneer*) distinction here that demonstrates Geeraerts et al.'s (2023) suggestion that the "area where near-synonyms overlap in a semantic vector space constitutes the envelope of variation for studying those lexemes as sociolinguistic variables" (p. 222). Overlap in semantic domains is also attested by Bauer et al. (2013, p. 230). It seems that competition frameworks may not always be adequate for characterizing this sort of complexity and that niches might come about for sociolinguistic, stylistic, semantic, or other reasons unrelated to competition.

The assumed teleology in many competition frameworks—that there must be pressure to resolve a competition as an explanation for the development of niches and for the competition itself—leaves us wanting for an alternate description of near-synonymous morphological constructions. There need to be models which account for usage and historical development of similar forms that coexist but are not necessarily competing for niche differentiation, in part because resolution is not always a forgone conclusion: "In derivation. . .resolution is seldom complete" (Aronoff 2023, pp. 56–57). Considering the highly contextual nature of language use and the "multitude of variables at work", we should remember that "languages are not precisely cyclical—that is, they evolve in patterned ways without ever *reaching an endpoint*, and they never repeat themselves exactly" (Bybee and Beckner 2015, p. 184; emphasis added).

As we noted at the outset of this article, competition as a linguistic concept is often described using not only ecological but also financial metaphors and jargon. In a capitalistic economy, there are winners and losers (O'Brien and Leichenko 2003). Unlike an ecosystem, equilibrium is not an inherent feature of capitalism. Capitalism is domineering; companies that stay in business, by whatever means, are the winners. Those that do not are the losers. However, *winning* and *losing* are not necessarily or inherently relevant concepts in morphology or linguistics in general. Morphological constructions do not win or lose; they are simply more or less frequent. Further, with respect to ecological models of competition, unlike organisms, affixes do not live or die. They are contextually applicable or they are not.

Tichý (2018) demonstrates that obsolescence is not definite and that the resurgence of an obsolete form is possible because it is not necessarily gone from the language. It remains in the record and, therefore, has potential (limited or unlikely though it may be) to be revived in written or spoken English. The revival of moribund affixes is not unattested. The prefix *step-* (e.g., *step-mother*) was so infrequent between the 16th and 18th centuries that it was suggested to have "vanished", but it later recovered and spread to form derivatives of many familial relationships (e.g., *step-brother, step-sister*, and *step-grandmother*) and continues to be productive (Bauer 2023, p. 7). Once it appears, the *-eer* suffix never completely "vanishes" from the OED record. Over time, *-eer* derivatives actually expand into new domains of use (see Tables 1 and 2). In that expansion, the development of similar forms using the same base continued (e.g., *marketeer/marketer, haulier/hauler*, and *staffier/staffer*). A non-competitive perspective considers how these near-synonymous forms coexist to enrich the range of expression possible in a specific context through niche differentiation.

In COHA, *marketeer* is counted 15 times, while *marketer* appears 112 times. Despite the OED's earliest attested date of 1665 for *marketeer*, it does not occur in COHA until 1940 and it does not occur in EEBO at all. In COHA, *marketer* occurs once in 1820 and then consistently after 1920, as well as twice in EEBO, with both occurrences in the 1690s. Therefore, though *marketeer* is attested in 1665, it does not appear again in the corpora used for this study until the early 20th century, revitalized with a new distinction. (Recall from Section 2.2 that *marketeer* is counted 71 times in COCA, while *marketer* is counted 1287 times). The frequency of *marketer* has increased over time, with some of the highest-frequency collocates in COCA being *online, internet*, and *social media* (i.e., *online marketer, internet marketer*, and *social media marketer*). On the other hand, the highest-frequency collocates for *marketeer* in COCA are *black, free*, and *socialist* (i.e., *black marketeer, free marketeer*, and *socialist marketeer*). While *marketer* has remained in line with its original and more general OED definition of 'a person who buys or sells in a market', *marketeer* now has a political and/or (anti)institutional distinction through its association with the *black market*, the *free market*, and *socialism*, giving *marketeer* a newfound vitality in the 20th and 21st centuries.

Considering the niche definition from the OED (i.e., 'a supporter of Britain's entry into the European Common Market') and the more specific collocates identified in COCA, we see that *marketeer* is still dependent on the definition of the base but also has the meaning potential of a political or even illicit (in the case of *black marketeer*) semantic niche. Just like *harpooneer* and *harpooner*, this relationship could also be seen as commensal: *marketer* is the more frequent derivative with the more frequent suffix, and since it is more strongly associated with the dictionary definition of the base *market*, it can be understood as not particularly dependent on, nor benefiting from, the niche meaning of the *-eer* derivative. Therefore, if we characterize this relationship as commensal, then we must assume that *marketeer* only has meaning potential for a political or (anti)institutional semantic niche in the formation of an agentive nominalization of *market*.

5.2. The Ecological Model of Symbiotic Coexistence in Morphology

The relationship between two similar forms is visible when contexts which demonstrate the subtle differences in meaning between the forms are taken into consideration. It is the historical, sustained co-existence of derivatives in *-er* and *-eer*, made distinct by their respective meaning potentials (i.e., niche distributions), that suggests to us that these suffixes are not in competition (or are not solely or always in competition) but are instead primarily in symbiosis. It seems that words of the form [x-*er*] are systematically related to words of the form [x-*eer*]. In the cases of *harpooneer/harpooner* and *marketeer/marketer*, the meaning potential of the *-eer* derivatives results in highly specific semantic niches that are dependent on both context and the definition of the base as well as a contrast with the corresponding *-er* derivative, which (in most cases) exemplifies the agent derivation of the dictionary definition of the base. Regarding *-eer*, there does not appear to be a single, generally predictable meaning contributed by the suffix. Rather, the network of *-eer* usage in

conjunction with a specific *-eer/-er* relationship of near-synonymous derivatives determines the particular meanings generated by *-eer*.

The symbiotic relationship between the suffixes *-eer* and *-er* is one of commensalism or mutualism. From a mutualism perspective, the more generalized meaning potential of the more frequent suffix (*-er*) is reinforced by contrast with the niche applications of the less frequent suffix (*-eer*); and as a suffix with niche application, *-eer*'s meaning potentials are highly dependent on the generalized meanings of the more frequent suffix *-er*. (Exceptions, where the opposite holds true, are rare but attested, e.g., *auctioneer/auctioner*.) Commensal relationships seem more likely in the symbiosis between *-eer* and *-er* due to the more frequent distribution of highly specific semantic niches to *-eer* derivatives. In other words, the meaning of the *-eer* derivatives benefits from and is more often dependent on the dictionary meaning of the corresponding *-er* derivatives, while the extent to which the interpretation of *-er* derivatives depends on the corresponding *-eer* form is less evident (though arguably possible). As the case of *auctioner/auctioneer* suggests, it is possible that either suffix could adopt the dictionary-specific or the evaluative, contextually specific role. The niche distribution is enriching for the constructions in question, not an indication of attrition or loss. As indicated in Figure 1, it is not the case that these niches exist only if there is pressure to resolve competition: they can emerge as suffixes co-develop and build derivatives with interdependent meanings over potentially very long periods of time.

Here, we refer to Lieber's (2016) concept of *contextual coercion*. Stated briefly, contextual coercion suggests that derivatives do not have invariable, fixed meanings; instead, the meaning potential of a derivative can only be fixed in context. Thus, the OED's categorization of *-eer* derivatives as having a "contemptuous implication", Bauer et al.'s (2013) suggestion of a "warrior-like" way of performing an action, or Lieber's (2016) contention of a "nuance that suggests competition" (p. 150) which can be "playful" or "disparaging" are all interpretations of the *meaning potential* rather than the definitive meaning of the derivative or construction in question. All of these interpretations must be grounded or *coerced* in a specific context. Rather than inventing new words or affixes, "we stretch the morphological types we have to fit the meanings we need to express. . .we only begin to see the full complexity of nominal meaning when we look at nouns in the contexts that corpus-based examples afford us" (Lieber 2016, p. 179). We find that in a historical analysis of meaning potential, the examples provided by corpora can reveal highly contextual and subtle distinctions—as well as complex, overlapping, and (inter)dependent meanings—among near-synonymous forms which have changed or remained the same over time.

No matter how similar two forms are semantically in the corpus data, if they are morphologically distinct, then they must have some semantic, pragmatic, or social distinction as well, as stated in Leclercq and Morin's (2023) Principle of No Equivalence. A symbiotic model addresses the question "Why do we (potentially) have use for both forms?" instead of "Which form is the more frequent and thus more likely to survive or win?". It provides us with an explanation as to *why* the coexistence of two near-synonymous constructions furthers our understanding of language as a finite phenomenon of infinite possibility. By utilizing a symbiotic model of coexistence—turning our attention to the meaning potential of a construction influenced by specific usage contexts and applying a diachronic analysis—we arrive at a more comprehensive understanding of the relationship between the nominalizing suffixes *-eer* and *-er*.

6. Limitations

Our analysis leads us to suggest a symbiotic relationship of commensalism or mutualism between *-er* and *-eer* due to the dependency or interdependency demonstrated by their near-synonymous derivatives. Even so, other symbiotic relationships (i.e., parasitism) may be applicable depending on the morphological phenomena under study. The symbiosis model proposed here is not claimed to be an all-purpose model for synonymy among morphological phenomena; some studies may be better served by applying a competition

model. Further, corpus linguistics involves certain disadvantages and limitations, explicitly discussed in Arppe et al. (2010), including the subjectivity of qualitative analysis (p. 6), the availability or scarcity of data (p. 10), and the outright dismissal of the "explanatory value" of corpora (p. 12). The corpora used for this study are not uniform in their design; COCA provides not only significantly more raw data, but also organizes it into a more diverse range of registers and genres than either COHA or EEBO. The most appropriate methods will always depend on the phenomena under study and are limited by the historical data we have available. This study is no different; we depended on a variety of sources, both American and British English, for our data as we attempted to analyze the *-eer* suffix as comprehensively as possible. In certain cases, the OED marked types as being either "U.S." (e.g., *weaponeer*) or "British" (e.g., *pensioneer*) or having transitioned from one to the other (e.g., *supermarketeer* "Originally *U.S*. Now chiefly *British*"). From this study, we cannot make definitive claims about dialect variation, but future studies may benefit from looking into how dialect intersects with morphological developments and how ecological models in morphology could be applicable in describing synonymy across global (i.e., not just US and British) varieties of English.

Competition models utilize ecological concepts, just like our symbiosis model, which are well fitted to describe certain morphological and semantic situations. We are not suggesting that a symbiosis model is better than a competition model: in fact, the value of applying multiple models to morphological phenomena (as we did in this study) may supersede the importance of one or the other. That is, utilizing a symbiosis model alongside a competition model can provide a comprehensive understanding of the phenomenon being studied: both models may inform and contribute to the conclusions of the research. We have attempted to illustrate this possibility with Figure 1. The present study is only concerned with the suffix *-eer*, and the symbiosis model proposed may be most applicable to similar cases of unusual derivational morphology (e.g., *-ster* and *-meister*). The question of what would qualify as "unusual" remains open-ended. Our study focuses only on the relationship between *-eer* and *-er*. But how many forms (i.e., agent-forming suffixes) should be considered as a part of the ecological network of "unusual" agent-forming suffixes? Our model could help in the development of a more expansive study concerned with the relationships between forms in this ecosystem.

7. Conclusions

We conclude that this analysis of *-eer* using a symbiotic model of coexistence can demonstrate the validity of an alternative ecological model which may have potential alongside or in place of an ecological model of competition in studies of other affixes and possibly in other languages as well. Our symbiotic model may help to answer larger questions in linguistics like how best to analyze multilingual morphological phenomena, such as the emergence of semantically similar forms within the same language. We hope the present study has demonstrated the importance of a diachronic approach in situations of near-synonymy, or competition, as an understanding of semantic similarity necessitates a review of the available historical record.

Our analysis left us curious as to why *-eer* is characterized by such an inconsistent predictability of its meanings compared to other similar nominalizing suffixes identified by Lieber (2016) (i.e., *-ster* and *-meister*). If it is possible for *-ster* to historically develop a consistently unconventional or even illicit meaning (e.g., *hipster* and *gangster*), what makes *-eer*, another agentive suffix with a similarly long history, resistant to settling into such predictable niches? Subsequent research could investigate this question. Future studies may also want to consider the degree to which *-eer* represents a contact-based aspect of English word formation, particularly in light of debates about the borrowing of derivational affixes (Palmer 2009; Seifart 2015). These studies could consider the potential relevance of a symbiosis model for explaining contact-based morphological change, perhaps looking at examples of suffix "naturalization" within a language (e.g., Burnley 1992) or "translanguaging" across linguistic boundaries (e.g., Otheguy et al. 2015).

Author Contributions: Conceptualization, Z.D. and C.C.P.; Investigation, Z.D. and C.C.P.; Writing—original draft, Z.D. and C.C.P. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: No new data were involved.

Acknowledgments: We would like to thank the editors of this special issue on Word-Formation Processes in English, as well as the anonymous reviewers for their comments and guidance on strengthening this article. We also want to acknowledge science instructor and friend Aaron Merritt, who offered advice on possible ecological models to consider other than competition. And thanks to our other editors for ensuring the smoothness of the process for submitting and revising this piece.

Conflicts of Interest: The authors declare no conflicts of interest.

Notes

1 The original cover is viewable here: https://www.bmimages.com/preview.asp?image=01613632138 (accessed on 8 March 2024).

2 At the same time, the *-ity/-ness* competition may be viewable as a type of symbiosis (perhaps commensalism). The spectrum proposed in Figure 1 is by no means static and is simply our effort to visualize the distinctions which may be relevant when analyzing forms in competition or symbiosis.

3 One other important note regarding orthography: the adjectival and nominal derivatives formed through the application of the comparative or nominalizing suffix *-er* to bases with word-final [i] (e.g., _[i] + *-er*) were not considered as part of the relevant data for this study. Though such derivatives are orthographically identical to nominal *-eer* derivatives that retain the <*ier*> spelling (e.g., *financier*), they are not similarly compositional compared to *-eer* derivatives (i.e., base + *-eer*). Thus, any such adjectival (e.g., *heavier*) or nominal derivatives (e.g., *candier*) were regarded as contaminates and not included in the analysis.

4 These derivatives are discussed regarding the diversification of the part of speech (adjective/verb/noun) of *-eer* derivatives over time but are not counted as part of the overall *-eer* data set because they do not represent constructions of the form "base + *-eer*."

5 Another important note regarding token frequency: certain very-high-token-frequency constructions (e.g., *engineer*) and high-token-frequency proper names (e.g., *Sawyer* and *Napier*) skewed the overall frequency counts, in some instances misrepresenting the data due to the frequency of a single token. When this was the case, it is explicitly stated.

6 The MISCELLANEOUS domain was comprised of tokens that did not fit into the other six domains. The tokens in the MISCELLANEOUS domain are divided into five subcategories: "type of person" (e.g., *grimacier*), "mechanism" (e.g., *eyeleteer*), "objects" (e.g., *etrier*), "animals" (e.g., *rockier*), and "plants" (e.g., *frambousier*).

7 By "consistent" we mean that after the 16th century there are at least 8 adjectival or verbal derivatives counted in each century (i.e., 9 in the 17th century, 9 in the 18th century, 10 in the 19th century, and 8 in the 20th century). Also, this separation coincides with more orthographic consistency after the 17th century.

8 While chi-square tests show no statistical difference between the two highest percentages of *-eer* derivative usage—in the 17th and 18th centuries—there is a statistically significant difference between the peak of 4.8% in the 18th century and the 2.1% rate of the 16th century ($p = 0.004$) and the 2.7% rate of the 19th century ($p = 0.020$).

9 I.e., *rippier*, 1384; *perrier*, 1481; *rapier*, 1503; *limoneer*, 1524; *besognier*, 1584; *volunteer*, 1618; *chicaneer*, 1653; *douzenier*, 1682; *ergoteer*, 1687; *Presbyteer*, 1708; *pompier*, 1815; *pikanier*, 1816; *macheer*, 1847; *menuisier*, 1847; *benitier*, 1853; *moskeneer*, 1874; *entremetier*, 1874; *entrier*, 1955.

10 The term *pion* appears in EEBO, COHA, and COCA but without a consistent definition. In COCA, the frequency is zero because the term appears in contexts with a distinct meaning irrelevant to *pioneer* (since the 1950s, *pion* has been used with a very specific definition in particle physics). Frequencies from COHA are also counted as zero because they tend to constitute orthographic errors or variations with words such as *champion* or *scorpion*, as well as what seem to be alternate spellings of *peon* ('an attendant') and a few proper nouns. Only three occurrences in EEBO of the verb *pion* (meaning 'to dig') in 1590, 1648, and 1695 correspond to the early definition of *pioneer* (i.e., 'a digger or excavator').

References

Arndt-Lappe, Sabine. 2014. Analogy in suffix rivalry: The case of English *-ity* and *-ness*. *English Language and Linguistics* 18: 497–548. [CrossRef]

Aronoff, Mark. 2016. Competition and the lexicon. In *Livelli di Analisi e Fenomeni di Interfaccia. Atti del XLVII Congresso Internazionale della Società di Linguistica Italiana*. Edited by Annibale Elia, Claudio Iacobini and Miriam Voghera. Roma: Bulzoni Editore, pp. 39–52.

Aronoff, Mark. 2019. Competitors and alternants in linguistic morphology. In *Competition in Inflection and Word-Formation*. Edited by Franz Rainer, Francesco Gardani, Wolfgang U. Dressler and Hans Christian Luschützky. Cham: Springer, pp. 39–66.
Aronoff, Mark. 2023. Three ways of looking at morphological rivalry. *Word Structure* 16: 49–62. [CrossRef]
Arppe, Antti, Gaëtanelle Gilquin, Dylan Glynn, Martin Hilpert, and Arne Zeschel. 2010. Cognitive corpus linguistics: Five points of debate on current theory and methodology. *Corpora* 5: 1–27. [CrossRef]
Bascoules, Sebastien, and Paul Smith. 2021. Mutualism between frogs (Chiasmocleis albopunctata, Microhylidae) and spiders (Eupalaestrus campestratus, Theraphosidae): A new example from Paraguay. *Alytes* 38: 58–63.
Bauer, Laurie. 2001. *Morphological Productivity*. Cambridge: Cambridge University Press, vol. 95.
Bauer, Laurie. 2023. The birth and death of affixes and other morphological processes in English derivation. *Languages* 8: 244. [CrossRef]
Bauer, Laurie, Rochelle Lieber, and Ingo Plag. 2013. *The Oxford Reference Guide to English Morphology*. Oxford: Oxford University Press.
Booij, Geert. 2012. Construction morphology, a brief introduction. *Morphology* 22: 343–46. [CrossRef]
Booij, Geert. 2019. The role of schemas in construction morphology. *Word Structure* 12: 385–95. [CrossRef]
Booij, Geert, and Jenny Audring. 2018. Partial motivation, multiple motivation: The role of output schemas in morphology. *Studies in Morphology* 4: 59–80.
Burnley, David. 1992. Lexis and semantics. In *The Cambridge History of the English Language*. Edited by Norman Blake. Cambridge: Cambridge University Press, pp. 409–99.
Bybee, Joan. 1985. *Morphology: A Study of the Relation Between Meaning and Form*. Amsterdam: Benjamins.
Bybee, Joan. 2006. *Frequency of Use and the Organization of Language*. Oxford: Oxford University Press.
Bybee, Joan. 2010. *Language, Usage, and Cognition*. Cambridge: Cambridge University Press.
Bybee, Joan, and Clay Beckner. 2015. Emergence at the cross-linguistic level: Attractor dynamics in language change. In *The Handbook of Language Emergence*. Edited by Brian MacWhinney and William O'Grady. Hoboken: John Wiley and Sons, pp. 181–200.
Cowie, Claire, and Christiane Dalton-Puffer. 2002. Diachronic word-formation and studying changes in productivity over time: Theoretical and methodological considerations. In *A Changing World of Words*. Edited by Javier E. Díaz Vera. Boston: Brill, pp. 410–37.
Croft, William. 2001. *Radical Construction Grammar: Syntactic Theory in Typological Perspective*. Oxford: Oxford University Press.
Dalton-Puffer, Christiane. 1996. *The French Influence on Middle English Morphology: A Corpus-Based Study on Derivation*. Berlin and New York: De Gruyter Mouton.
Davies, Mark. The Corpus of Contemporary American English (COCA). 2008–2024. Available online: https://www.english-corpora.org/coca/ (accessed on 1 November 2023).
Davies, Mark. 2010. The Corpus of Historical American English (COHA). Available online: https://www.english-corpora.org/coha/ (accessed on 1 November 2023).
Davies, Mark. 2017. Early English Books Online Corpus (EEBO). Available online: https://www.english-corpora.org/eebo/ (accessed on 1 November 2023).
Divjak, Dagmar. 2006. Ways of intending: Delineating and structuring near-synonyms. In *Corpora in Cognitive Linguistics: Corpus-Based Approaches to Syntax and Lexis*. Edited by Stefan Gries and Anatol Stefanowitsch. Berlin: Mouton de Gruyter, pp. 19–56.
Dundee, Harold, Cara Shillington, and Colin M. Yeary. 2012. Interactions between tarantulas (Aphonopelma hentzi) and narrow-mouthed toads (Gastrophyrne olivacea): Support for a symbiotic relationship. *Tulane Studies in Zoology and Botany* 32: 31–38.
Fernández-Alcaina, Cristina, and Jan Čermák. 2018. Derivational paradigms and competition in English: A diachronic study on competing causative verbs and their derivatives. *SKASE Journal of Theoretical Linguistics* 15: 69–97.
Fernández-Domínguez, Jesús. 2017. Methodological and procedural issues in the quantification of morphological competition. In *Competing Patterns in English Affixation*. Edited by Juan Santana Lario and Salvador Valera. Bern: Peter Lang, pp. 67–117.
Gause, Gregory. 1934. *The Struggle for Existence*. Baltimore: The Williams and Wilkins Company.
Geeraerts, Dirk, Dirk Speelman, Kris Heylen, Mariana Montes, Stefano De Pascale, Karlien Franco, and Michael Lang. 2023. *Lexical Variation and Change: A Distributional Semantic Approach*. Oxford: Oxford University Press.
Goldberg, Adele. 1995. *Constructions: A Construction Grammar Approach to Argument Structure*. Chicago: Chicago University Press.
Goldberg, Adele. 2019. *Explain Me This: Creativity, Competition, and the Partial Productivity of Constructions*. Princeton: Princeton University Press.
Gries, Stefan. 2001. A corpus-linguistic analysis of English-ic vs-ical adjectives. *Icame Journal* 25: 65–108.
Hanks, Patrick. 2013. *Lexical Analysis: Norms and Exploitations*. Cambridge: The MIT Press.
Hay, Jennifer. 2003. *Causes and Consequences of Word Structure*. New York: Routledge.
Hay, Jennifer, and Harald Baayen. 2002. Parsing and productivity. In *Yearbook of Morphology 2001*. Edited by Geert Booij and Jaap Van Marle. Dordrecht: Springer, pp. 203–35.
Hilpert, Martin. 2013. *Constructional Change in English: Developments in Allomorphy, Word Formation, and Syntax*. Cambridge: Cambridge University Press.
Hippisley, Andrew, and Gregory Stump. 2016. *The Cambridge Handbook of Morphology*. Cambridge: Cambridge University Press.
Hoffmann, Thomas. 2022. *Construction Grammar: The Structure of English*. Cambridge: Cambridge University Press.
Hüning, Matthias, and Geert Booij. 2014. From compounding to derivation the emergence of derivational affixes through "constructionalization". *Folia Linguistica* 48: 579–604. [CrossRef]

Huyghe, Richard, and Rossella Varvara. 2023. Affix rivalry: Theoretical and methodological challenges. *Word Structure* 16: 1–23. [CrossRef]
Kaunisto, Mark. 2007. *Variation and Change in the Lexicon: A Corpus-based Analysis of Adjectives in English Ending in -ic and -ical*. Amsterdam and New York: Rodopi B. V.
Kibbee, Douglas A. 1991. *For to Speke Frenche Trewely: The French Language in England, 1000–1600: Its Status, Description, and Instruction*. Amsterdam: J. Benjamins Pub., Co.
Langacker, Ronald. 1987. *Foundations of Cognitive Grammar: Theoretical Prerequisites*. Redwood City: Stanford University Press, vol. 1.
Leclercq, Benoît, and Cameron Morin. 2023. No equivalence: A new principle of no synonymy. *Constructions* 15: 1–16.
Lieber, Rochelle. 2016. *English Nouns: The Ecology of Nominalization*. Cambridge: Cambridge University Press.
Lindsay, Mark, and Mark Aronoff. 2013. Natural selection in self-organizing morphological systems. In *Morphology in Toulouse: Selected Proceedings of Décembrettes 7*. Edited by Fabio Montermini, Gilles Boyé and Jesse Tseng. Munich: Lincom Europe, pp. 133–53.
Marchand, Hans. 1960. *The Categories and Types of Present-Day English Word Formation*. Weisbaden: Otto Harrassowitz.
Mattiello, Elisa. 2018. Paradigmatic morphology splinters, combining forms, and secreted affixes. *SKASE Journal of Theoretical Linguistics* 15: 2–22.
Moya, Andrés, Juli Peretó, Rosario Gil, and Amparo Latorre. 2008. Learning how to live together: Genomic insights into prokaryote-animal symbioses. *Nature Reviews Genetics* 9: 218–29. [CrossRef]
Nagano, Akiko. 2023. Affixal rivalry and its purely semantic resolution among English derived adjectives. *Journal of Linguistics* 59: 499–530. [CrossRef]
O'Brien, Karen L., and Robin M. Leichenko. 2003. Winners and losers in the context of global change. *Annals of the Association of American Geographers* 93: 89–103. [CrossRef]
Otheguy, Ricardo, Ofelia García, and Wallis Reid. 2015. Clarifying translanguaging and deconstructing named languages: A perspective from linguistics. *Applied Linguistics Review* 6: 281–307. [CrossRef]
Palmer, Chris C. 2008. Borrowed derivational morphology in Late Middle English: A study of the records of the London Grocers and Goldsmiths. In *Studies in the History of the English Language IV: Empirical and Analytical Advances in the Study of English Language Change*. Edited by Susan M. Fitzmaurice and Donka Minkova. Berlin and New York: De Gruyter, pp. 231–64.
Palmer, Chris C. 2009. *Borrowings, Derivational Morphology, and Perceived Productivity in English, 1300–1600*. Ann Arbor: University of Michigan.
Palmer, Chris C. 2015. Measuring productivity diachronically: Nominal suffixes in English letters, 1400–1600. *English Language and Linguistics* 19: 107–29. [CrossRef]
Plag, Ingo. 1999. *Morphological Productivity. Structural Constraints in English Derivation*. Berlin: Mouton de Gruyter.
Rodríguez-Puente, Paula, Tanja Säily, and Jukka Suomela. 2022. New methods for analysing diachronic suffix competition across registers: How -ity gained ground on -ness in Early Modern English. *International Journal of Corpus Linguistics* 27: 506–28. [CrossRef]
Roth, Isabel. 2010. Explore the influence of French on English. *Leading Undergraduate Work in English Studies* 3: 255–61.
Rothwell, William. 1998. Arrivals and departures: The adoption of French terminology into Middle English. *English Studies* 79: 144–65. [CrossRef]
Rothwell, William. 2001. English and French in England after 1362. *English Studies* 82: 539–59. [CrossRef]
Seifart, Frank. 2015. Direct and indirect affix borrowing. *Language* 91: 511–32. [CrossRef]
Smith, Chris A. 2020. A case study of *-some* and *-able* derivatives in the *OED3*: Examining the diachronic output and productivity of two competing adjectival suffixes. *Lexis* 16: 279–387.
Smith, Chris A. How is *stickage* different from *sticking*? A study of the semantic behaviour of V-*age* and V-*ing* nominalisations (on monomorphemic bases). In *Nouns and the Morphosyntax/Semantics Interface*. Edited by Laure Gardelle, Elise Mignot and Julie Neveux. New York: Springer International Publishing, Forthcoming.
Štekauer, Pavol. 2017. Competition in natural languages. In *Competing Patterns in English Affixation*. Edited by Juan Santana Lario and Salvador Valera. Bern: Peter Lang, pp. 15–31.
Tichý, Ondřej. 2018. Lexical obsolescence and loss in English: 1700–2000. In *Applications of Pattern-Driven Methods in Corpus Linguistics*. Amsterdam: John Benjamins, pp. 81–103.
Tomasello, Michael. 2005. *Constructing a Language: A Usage-Based Theory of Language Acquisition*. Cambridge: Harvard University Press.
Traugott, Elizabeth, and Graeme Trousdale. 2013. *Constructionalization and Constructional Changes*. Oxford: Oxford University Press, vol. 6.
Walker, Terry. 2017. he saith yt he think es yt: Linguistic factors influencing third person singular present tense verb inflection in Early Modern English depositions. *Studia Neophilologica* 89: 133–46. [CrossRef]