

UCLA

UCLA Electronic Theses and Dissertations

Title

On Nominal Polysemy

Permalink

<https://escholarship.org/uc/item/6c26k6n8>

Author

Coen, Noah Michael

Publication Date

2023

Peer reviewed|Thesis/dissertation

UNIVERSITY OF CALIFORNIA  
Los Angeles

On Nominal Polysemy

A thesis submitted in partial satisfaction  
of the requirements for the degree Master of Arts  
in Linguistics

by

Noah Michael Coen

2023

© Copyright by  
Noah Michael Coen  
2023

## ABSTRACT OF THE THESIS

On Nominal Polysemy

by

Noah Michael Coen

Master of Arts in Linguistics

University of California, Los Angeles, 2023

Professor Jessica L. Rett, Chair

The term *POLYSEMY* refers to the exhibition of multiple meanings, but this description is theoretically unhelpful and far from transparent. Polysemy has attracted attention from a diverse array of language-related academic (sub)disciplines, with modern linguistic work on the topic going back to at least the early 1970s. However, this attention has led to relatively muted progress in the realm of formal linguistic theory; this is especially true of Montagovian semantics. This thesis presents and problematizes the standard account of polysemy. I show that polysemous predicates are not well-described with the devices of our theory off-the-shelf and that the standard diagnostic—even when interpreted as explicitly and generously as possible—does not produce a concrete, coherent set of results. I also show that grinding, though usually discussed as a variety of polysemy in the literature, is better described as a distinct, independent phenomenon.

This thesis of Noah Michael Coen is approved.

Dylan Bumford

Samuel John Cumming

Jessica L. Rett, Committee Chair

University of California, Los Angeles

2023

# Contents

<b>Title Page</b>	<b>i</b>
<b>Abstract</b>	<b>ii</b>
<b>Table of Contents</b>	<b>v</b>
<b>1 Introduction</b>	<b>1</b>
<b>2 The Canonical Account</b>	<b>1</b>
2.1 Historical Context . . . . .	1
2.2 A Note on Terminology . . . . .	2
2.3 The Standard Diagnostic . . . . .	3
2.4 Adjacent Phenomena . . . . .	6
2.4.1 Homophony . . . . .	6
2.4.2 Deferred Reference . . . . .	8
2.5 The Empirical Picture . . . . .	9
2.5.1 Overview . . . . .	10
2.5.2 Expanded Exemplification of Diagnostic . . . . .	11
<b>3 Problematizing the Canon</b>	<b>13</b>
3.1 A Preliminary Note on Selectional Restrictions . . . . .	13
3.2 The Explanandum . . . . .	14
3.2.1 Overview . . . . .	14
3.2.2 Differentiating Mereological Sums . . . . .	16
3.2.3 Differentiating Synthetic Predicates . . . . .	18
3.3 Theoretical Desiderata . . . . .	19
<b>4 On the Canonical Empirical Domain</b>	<b>23</b>

<b>5 On Grinding</b>	<b>28</b>
<b>6 Conclusion</b>	<b>32</b>
<b>References</b>	<b>34</b>

## List of Figures

1	Varieties of Predicate Conjunction . . . . .	4
2	A Join Semi-Lattice . . . . .	17



This material is based upon work supported by the National Science Foundation Graduate Research Fellowship under Grant No. DGE-2034835. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of the National Science Foundation.

# 1 Introduction

The topic of polysemy has attracted attention from a diverse array of language-related academic (sub)disciplines, with modern linguistic work on the topic going back to at least the early 1970s. However, this attention has led to relatively muted progress in the realm of formal linguistic theory; this is especially true of Montagovian semantics (defined broadly), where polysemy has been mostly ignored. The term polysemy refers to the exhibition of multiple meanings, but this description is theoretically unhelpful and far from transparent. After precisely defining and exemplifying the phenomenon in relation to a linguistic diagnostic, this paper provides contrasting empirical accounts of polysemy and adjacent, often-conflated phenomena (Section 2). I then turn to showing that polysemous predicates are not well-described with the devices of our theory off-the-shelf (Section 3). I subsequently provide a critical discussion of the canonical set of polysemes, arguing that it should likely be expanded and exploring future research questions in this arena (Section 4). After this, I shift to overviewing a phenomenon known as *grinding*; although often considered a variety of nominal polysemy, I show that it needs a theoretical analysis distinct from that of standard nominal polysemy, suggesting directions for such an analysis (Section 5). Finally, I briefly conclude and provide possible directions of future research (Section 6).

## 2 The Canonical Account

### 2.1 Historical Context

The term *polysemy* was coined in 1897 by Michel Bréal, who had earlier coined the term *semantics* (Bréal 1883; Bréal 1897). The initial use of the term was very broad, generally encompassing any word that could be said to have multiple meanings. *Polysemy* has even been used to describe cross-categorical sense alternations, such as that illustrated in example (1), below. Here, we see the word *phone* being used as a noun in example (1a) and as a verb in example (1b).

- (1) a. He pulled out [his phone]. NOUN  
 b. E.T. promised he would [phone] home. VERB

In the nominal realm, lexical semanticists in the twentieth century produced more articulated accounts of sense relations, leading to a subdivision of polysemy. The multiple meanings associated with some terms appeared more closely related than those associated with other terms; the former remained under the label *polysemy*, while the latter were designated instances of *homophony* (Cruse 1986, p. 80). This distinction is outlined in detail in Section 2.3 and homophony is expanded upon at length in Section 2.4.<sup>1</sup>

## 2.2 A Note on Terminology

The literature on polysemy (and on reference more generally) has not converged upon standard usages for several terms central to these areas of inquiry.<sup>2</sup> Crucially, my use of the term *sense* differs from Frege (1892 [1948])’s notion of *Sinn*. The latter is associated with cases in which different referential DPs share a denotation/referent. Lyons (1977a)<sup>3</sup> provides the following example: “der Sieger von Jena” (*the victor at Jena*) and “der Besiegte von Waterloo” (*the loser at Waterloo*) are both senses—*Sinne*, that is—of *Napoleon*. In contrast, my use of *sense* herein is more in line with its colloquial usage in English (e.g., *in the sense of*). Put more formally, I use the term *sense* to refer to the different possible referents of a single referring expression/referential DP.

For instance, in example (2), below, the senses (in this sense of *sense*) of the referential DP *the newspaper* are that of a physical object in (2a) and that of an intangible, informational object in (2b). Further examples are provided and discussed in Section 2.5.

---

<sup>1</sup>Work on sense relations also led to classifications like meronymy (synecdoche), where the term for a part is used to denote the whole (Cruse 1986, p. 159).

<sup>2</sup>This is highlighted by the fact that Geoffrey Nunberg—one of the most prominent scholars of sense relations—uses the terms “deferred ostension” (1995), “deferred reference” (1995), “transferred sense” (1995), “transfer of meaning” (1995), “predicate transfer” (2004), “deferred interpretation” (2004), and “reference transfer” (2004) all to denote the same phenomenon.

<sup>3</sup>Citing Coseriu & Geckeler; attributed to Husserl

- (2) a. [The newspaper] is in the driveway. PHYSICAL OBJECT
- b. [The newspaper] has an abundance of hot takes today. INFORMATION

### 2.3 The Standard Diagnostic

COPREDICATION—a construction used as a polysemy diagnostic in Cruse (1986)—quickly became the standard method of differentiating polysemy and homophony.<sup>4</sup> Whether explicitly or implicitly, the acceptability of copredication constructions is a defining characteristic of polysemy in practically all accounts since Cruse (Nunberg 2004, p. 347; Frisson and Frazier 2005, pp. 278–279; Asher 2011, p. 63, *inter alia*). Asher (2011, p. 63) provides the clearest formation of this diagnostic, describing it as requiring a construction that exhibits “predicates predicating properties of distinct senses [of a polyseme]”. The most common—and often the only—structure used for this is the explicit linguistic conjunction of two predicates with *and*. This is exemplified with the polyseme *book* in example (3), below. The text in italics makes explicit the intended reading.

- (3) [The book] has a scratched cover and is deeply inspiring.

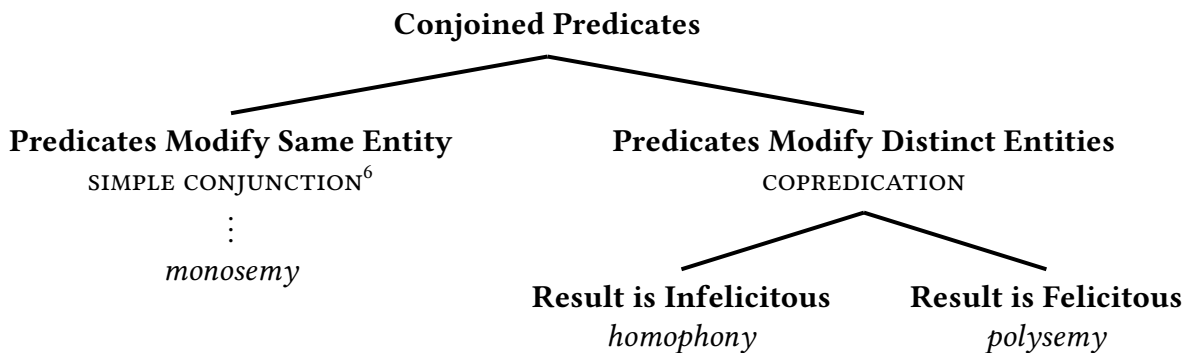
*THE PHYSICAL BOOK has a scratched cover and THE INFORMATION THEREIN is deeply inspiring*

This diagnostic allows us to determine whether a given DP containing a (hypothesized) polyseme can be modified by two predicates that exhibit non-overlapping selectional restrictions relative to the two (hypothesized) senses of said polyseme. This prevents the inclusion of two predicates that are actually modifying the same sense of the polyseme. In the case of example (3), we determined that *book* was a polyseme because the DP containing it—*the book*—was felicitously modified by the conjoined predicates *has a scratched cover* and *is deeply inspiring*. This test was validated by our observation that the former predicate applied to a physical object, while the latter applied to an abstract, informational one. So polysemy is diagnosed via copredication, which is defined with respect to selectional restrictions.

---

<sup>4</sup>Technically not only homophony. This is the topic of Section 2.4.

Given their centrality to this definition of polysemy, I now turn to refining the notions of copredication and selectional restrictions. The term *copredication* is not transparently distinct from simple conjunction; this is why selectional restrictions play such a key role. In simple conjunction, the conjoined predicates modify the same entity. In copredication, they modify distinct entities. This is illustrated in the diagram in Figure 1, below. Note that Figure 1 assumes that both predicates felicitously modify the DP being tested in single-predicate constructions.<sup>5</sup>



**Figure 1:** Varieties of Predicate Conjunction

The first bifurcation in Figure 1 distinguishes constructions in which two conjoined predicates modify a single entity and those in which the predicates each modify a distinct entity. This is determined by the **SELECTIONAL RESTRICTIONS** of these predicates. Selectional restrictions were conceptualized and introduced to linguistic theory by Harris (1946) and popularized by discussions in Chomsky’s *Syntactic Structures* (1957) and *Aspects of the Theory of Syntax* (1965) (Prandi 2016, p. 73; Magidor 2013, pp. 25–28).<sup>7</sup> Selectional restrictions are sometimes called ‘sortal presuppositions’, as they are commonly implemented—particularly in computational linguistics—as lexically encoded presuppositions (Bergmann 1977, p. 79; Magidor 2013, p. 15). If a selectional restriction is violated, the result is infelicity in the form of a

<sup>5</sup>So in the case of example (3), the test is only valid because ‘*The book has a scratched cover.*’ and ‘*The book is deeply inspiring.*’ are felicitous separately.

<sup>6</sup>This node does not branch off, as the result will necessarily be felicitous.

<sup>7</sup>In *Syntactic Structures*, Chomsky claims category mistakes (the result of selectional restriction violations) are semantic, while in *Aspects* he claims they are a syntactic phenomenon. The later syntax literature tends to place them under semantics, and by Chomsky (2000), he is agnostic (Magidor 2013, pp. 17–20, 25–29).

CATEGORY MISTAKE. This is used to explain the infelicity of utterances like those from Russell and Chomsky in example (4), below, in contrast with instances of structural ungrammaticality (Lyons 1995, p. 135).

- (4) a. # Quadruplicity drinks procrastination. (Russell 1940, pp. 166–167)  
b. # Colorless green ideas sleep furiously. (Chomsky 1957, p. 15)

The core idea is that predicates vary in what sorts of things they can apply to, and these limitations are encoded as selectional restrictions. More precisely—under the conceptualization of selectional restrictions I adopt—predicates vary in what sets of entities they can felicitously modify, and these sets are what define the predicates’ selectional restrictions. For example, we would say the second argument of the two-place predicate *drink*<sub>VRB</sub> is restricted to the set of drinkable entities (generally liquids). The utterance from Russell (1940)’s in example (4a) is infelicitous because *procrastination* is not a member of this set; it falls outside of the selectional restriction of *drink*<sub>VRB</sub>. I now turn to summarizing the copredication diagnostic.

If two predicates applying to a shared argument (a referential DP) are felicitously conjoined, either copredication or simple conjunction could be the construction on display. If both predicates modify the same entity in the intersection of the selectional restrictions of these predicates—that is, the sets of entities to which each can felicitously apply—then this is an instance of simple conjunction. However, if each predicate modifies an entity in the symmetric difference of their selectional restrictions<sup>8</sup>, then this is an instance of (polysemy-diagnosing) copredication, as it indicates that the DP to which the predicates both apply denotes distinct senses.

Thus far, we have only considered the most common version of the copredication diagnostic: explicit linguistic conjunction of two predicates. This is practically the only version utilized in the literature, but it is worth briefly discussing variations here. Asher (2011, p. 63), in contrast with other accounts, provides an additional structure for this ‘copredication’

---

<sup>8</sup>Since I have already specified that the construction is felicitous, it follows that each predicate is modifying an entity in the set difference of its selectional restriction and that of the other predicate.

diagnostic: pronominalization. This version can be used when the referential DP in question has an anaphor. In this test, the predicate modifying the lexeme and the predicate modifying its co-indexed anaphor must modify distinct senses of the referent—just as in the standard copredication test, above. Example (5), below, is analogous to example (3).

(5) [The book] has a scratched cover. [It] is also deeply inspiring.

In addition to the two tests above, I propose a third structure that diagnoses the same properties. This involves utterances in which the referential DP contains a modifier. If this modifier and the predicate of the aforementioned DP modify distinct senses of the referent, the test is valid. Example (6), below, is analogous to examples (3) and (5).

(6) [The scratched book] is deeply inspiring.

As evidenced by examples (3), (5), and (6), these tests all diagnose the relevant property described in this section and thus qualify as ‘copredication’ tests for the purposes of this paper.

## 2.4 Adjacent Phenomena

Before diving into our discussion of polysemy, it is useful to discuss two adjacent phenomena that do not meet the criteria delineated in Section 2.3, thus serving as a (partial) negative empirical account. These are HOMOPHONY and DEFERRED REFERENCE, which are discussed in Sections 2.4.1 and 2.4.2, respectively.

### 2.4.1 Homophony

Homophony is exemplified in (7) and (8), below.

- (7) a. [The bank] closes at 5pm. FINANCIAL INSTITUTION  
b. [The bank] is composed of sediment. RIVER LANDFORM

- (8) a. [The cell] is non-cancerous. BIOLOGICAL UNIT  
 b. [The cell] is led by John Smith. GROUP OF PEOPLE

As these examples indicate, both *bank* and *cell* are associated with two distinct entities—a feature also associated with polysemy. The former exhibits an alternation between referring to a financial institution and a river-related landform<sup>9</sup>, and the latter exhibits an alternation between referring to a biological unit and a group of people. However, these senses crucially cannot both be felicitously modified in copredication environments or the analogous configurations outlined in Section 2.3—distinguishing them from polysemes. This is illustrated for *bank* and *cell* in examples (9a) and (9b), respectively.<sup>10</sup>

- (9) a. # [The bank] offers free checking accounts and was carved by river erosion.  
 b. # [The cell] is prokaryotic and run by a reactionary populist.

The examples in (9) are infelicitous and thus fail the polysemy diagnostic outlined in Section 2.3. Deriving this infelicity is quite straightforward, though I should first specify precisely what I wish to convey with the # symbol. These examples are infelicitous in that, for either sense of the term, one of the predicates will result in a category mistake. So for *bank*, we can simply say that English contains two distinct words pronounced /bæŋk/, each with a unique denotation: [[bank<sub>1</sub>]] and [[bank<sub>2</sub>]]. The former denotes a currency-handling institution, while the latter denotes the sediment alongside a river. The predicate *offers free checking accounts* is only able to modify [[bank<sub>1</sub>]], while *was carved by river erosion* is solely compatible with [[bank<sub>2</sub>]].

---

<sup>9</sup>The word *bank* is both homophonous and polysemous (more precisely, one of the homophonous lexemes is itself polysemous). The polysemous sense alternation is between a financial institution and the location at which it operates.

<sup>10</sup>These examples demonstrate that homophony can result from various diachronic pathways and is thus not a unitary phenomenon. The two senses of *bank* were borrowed into English at separate times from separate languages: early North Germanic and early Middle French (OED 2022). One can thus not make a (valid) semantic extension argument from a cognitive framework (such as Sweetser 1990). As for *cell*, the etymology of both senses is the same (OED 2022); however, we observe identical behavior to *bank*. This is reflected in the infelicity of (9b). It is also reflected in the lack of cross-linguistic cohesion. Consider their Russian equivalents: *political cell* is *političeskaja jačejka*, while *prokaryotic cell* is *prokariotičeskaja kletka*; the words for *cell* are distinct.



The infelicity of the utterances in example (9) is a result of the fact that one instance of a referring expression may only be associated with one denotation in a given context. Thus, if the phonetic form thereof is ambiguous between multiple denotations, this ambiguity must be resolved. In other words, the selectional restrictions of all predicates modifying a given argument must be compatible with (i.e., these predicates must be able to modify) the semantic entity denoted by that argument. Because the predicates in example (9a) are compatible with different denotations associated with /bæŋk/, the utterance cannot be felicitous. And this is precisely what we observe. A parallel explanation holds for *cell* in example (9b).

#### 2.4.2 Deferred Reference

The second relevant non-polysemous multiple-meaning phenomenon is deferred reference (or sense transfer). A prototypical instance thereof is exemplified in (10), below.

- (10) a. [The ham sandwich] is warm. FOOD  
b. [The ham sandwich] wants to speak to the manager. CUSTOMER

This phenomenon can be attributed to Nunberg (1995, 2004), who argues that sense alternations constitute a spectrum of phenomena, with fully lexicalized items on one end and exclusively pragmatic extensions on the other. The example he uses to illustrate the former is *cell*, which I discuss in detail in the section on homophony, above. On the latter end of Nunberg’s spectrum lie *ham sandwich*-style examples, as in example (10b). Nunberg describes these as metonymic transfers and claims they are distinctly extralexical (Nunberg 2004, pp. 348, 352). In other words, the lexical entry for *ham sandwich* is not thought to include persons who have ordered a ham sandwich.

Nunberg goes on to say that in between the aforementioned poles of the spectrum “lies a very broad range of productive alternations whose status is less clear” (Nunberg 2004, p. 352). It is precisely this broad, unclear swath of phenomena that the present paper aims to elucidate. And although homophony and deferred reference fall on opposite ends of what Nunberg describes

as a scale, I believe a horseshoe is a better model, as deferred reference is markedly similar to homophony.

As examples (7) and (8) illustrated for instances of homophony, example (10) evidences two distinct senses denoted by *ham sandwich*: a food item and the customer who ordered it. Similarly—as example (9) demonstrated for homophony—example (11), below, shows that *ham sandwich* does not pass the copredication test outlined in Section 2.3.

(11) # [The ham sandwich] is delicious and wants his receipt.

Deriving the infelicity of example (11) requires an almost identical explanation to that proposed for homophony—the only difference being the source of the distinct senses. In example (11), the referential DP *the ham sandwich* must undergo a transfer of reference in order to be compatible with modification by the property *wants his receipt*, as food items are unable to *want* anything—they are inanimate. This is not a problem for the first predicate—*delicious*—which is perfectly compatible with the standard meaning of *ham sandwich*. The infelicity of example (11) thus indicates exactly what the infelicity of the examples in (9) did: the existence of multiple meanings does not automatically allow for copredication therewith—that is a property unique to polysemy.

In cases of homophony, the meanings are associated with distinct lexical items. In cases of deferred reference, the second sense is pragmatically derived. The infelicity of example (11) indicates that the standard and deferred meanings cannot both be associated with a single instance of a referential DP. It behaves as though a new, homophonous lexical item has been created—not as an expansion of the standard denotation.

## 2.5 The Empirical Picture

Individual-individual ( $e \sim e$ ) polysemy is the variety of nominal polysemy at the center of the present paper. Within the realm of nominal polysemy, there are further subdivisions; individual-individual ( $e \sim e$ ) polysemy is only one variety thereof. Many linguists consider kinds ( $k$ ), degrees

(*d*), and events (*v*)—among others—to be entities meaningfully distinct from individuals (*e*) (Rett 2022, pp. 277–280). Correspondingly, polysemous sense alternations between individuals and each of the aforementioned types exist.<sup>11</sup>

### 2.5.1 Overview

Within individual-individual ( $e \sim e$ ) polysemy alone, there is significant diversity within the set of canonically polysemous sense alternations. This is illustrated in part by the cases presented in example (12), all of which come from the literature.

- (12) a. [The bank] is just around the corner and specializes in subprime loans.  
INSTITUTION/BUILDING | (Asher 2011, p. 131)
- b. [The dictionary] is very bulky but also very informative.  
PHYSICAL OBJECT/INFORMATION | (Frisson and Frazier 2005, p. 279)
- c. David opened and drank [his beer].  
CONTENT/CONTAINER  
(adapted from Copestake and Briscoe 1995, p. 13)

Example (12a)—*bank*—from Asher (2011) exhibits an alternation between referring to a building/a location and referring to an organization that operates therein. Because *bank* is also a canonical example of homophony—see Section 2.4—I provide the analogous example of *synagogue* in (13), below, which does not also exemplify homophony.

- (13) [The synagogue] is in West LA but also has a campus in Koreatown.

The building in West LA does not own another building in Koreatown, and there is no salient physical relationship between the two places. Rather, the institution that operates at the

---

<sup>11</sup>Examples of individual-kind ( $e \sim k$ ) and individual-event ( $e \sim v$ ) polysemy can be found in Asher (2011). Examples of individual-degree ( $e \sim d$ ) polysemy can be found in Rett (2014).

Although I do not address any of the aforementioned non- $e \sim e$  varieties herein, it is worth specifically highlighting that none of the examples I provide of polysemous sense alternations are intended as individual-kind ( $e \sim k$ ) alternations.

building in West LA also operates at another building in Koreatown. Additional examples of this alternation include many places of business and worship.

Example (12b)—*dictionary*—from Frisson and Frazier (2005) exhibits an alternation between a physical object and its informational content. We have already seen this sense alternation in example (3)—*book*—in Section 2.3. An example of *book* from the literature is given in (14), below. Further analogous terms include *scroll*, *tablet*, *newspaper*, and *journal*.

(14) [The book] is interesting but very heavy to lug around. (Asher 2011, p. 86)

Example (12c)—*beer*—from Copestake and Briscoe (1995) exhibits an alternation between a container and the contents thereof. Analogs include *water*, *coke*, *soup*, and many others. This alternation is crucially distinct from the phenomenon known as PORTIONING or PACKAGING (Frisson and Frazier 2005). Portioning describes the shift from a non-countable substance to countable portions thereof. The example presented in (12c) is thus fed by portioning, but the relevant alternation is not between a unit of contained substance (*beer*<sub>+COUNT</sub>) and its source (*beer*<sub>+MASS</sub>); the relevant alternation is between a container and the substance contained therewithin.

An analogous case of this sense alternation is *bottle*, shown in example (15). In Section 2.5.2, I analyze this example in detail.

(15) Ezra picked up and chugged [the bottle].

### 2.5.2 Expanded Exemplification of Diagnostic

In this section, I provide a more detailed exemplification of our diagnostic for polysemy using *bottle*. Suppose we want to determine whether the term *bottle* is polysemous. We have an intuition or a hypothesis that the term refers to both a container and its content—distinct individuated entities—because both utterances in example (16) are felicitous.

- (16) a. [The bottle] is in the recycling bin. CONTAINER  
 b. [The bottle] is quite sweet. CONTENT

Referencing Section 2.3, we evaluate its behavior in a copredication test. This is demonstrated in example (17) and the ensuing discussion.

- (17) Ezra picked up and chugged [the bottle]. CONTAINER/CONTENT

We know that both predicates are modifying the denotation of *the bottle*, as both are two-place predicates and the sentence has only two arguments: *Ezra* and *the bottle*. The examples in (18) and (19) confirm that we chose predicates whose selectional restrictions do not overlap with respect to the senses at issue.

- (18) a. ✓ Ezra picked up [the bottle qua container]. CONTAINER  
 b. # Ezra chugged [the bottle qua container]. CONTAINER  
 (19) a. # Ezra picked up [the wine in the bottle]. CONTENT  
 b. ✓ Ezra chugged [the wine in the bottle]. CONTENT

The judgement represented by the # symbol here is slightly different from the one it represented in Section 2.4, but this is not theoretically problematic. “Infelicity”—which is marked with #—is not a unitary phenomenon; Schlenker (2011, p. 849) remarks that instances thereof “need not form a natural class”. In examples (18b) and (19a), the # symbol indicates a technically plausible, but markedly non-standard reading; crucially, it indicates that the reading is not the one observed in the relevant empirical data (in this case, example 17).<sup>12</sup> The fact that there is a reading of (17) wherein *picked up* modifies a container and *chugged* modifies the contents thereof provides evidence in favor of a single term—*bottle*—denoting two distinct senses. Thus, we diagnose this as a case of polysemy.

---

<sup>12</sup>It is theoretically possible to chug the bottle itself; one would need to melt it and consume the molten glass. This would not be advisable. Similarly, it is possible to pick up wine. This has far less severe consequences, but would still be ineffective and make a mess in the process. Neither of these readings is elicited by uttering (17).

### 3 Problematizing the Canon

#### 3.1 A Preliminary Note on Selectional Restrictions

In subsequent sections, I presuppose the existence of selectional restrictions; in the present section, I re-introduce the conception of thereof used in this paper and justify the aforementioned assumption. As discussed in Section 2.3, selectional restrictions have been discussed in the philosophy of language and theoretical linguistics literatures since the 1940s, with Chomsky’s presentations thereof in *Syntactic Structures* (1957) and *Aspects of the Theory of Syntax* (1965) bringing these discussions into the mainstream (Magidor 2013, pp. 17–20, 25–29). Selectional restrictions encode the fact that different predicates can felicitously modify different sorts of entities. For example, the predicate *has a scratched cover* can apply to physical objects, but not abstract informational ones.

When a selectional restriction is violated—i.e., when a predicate attempts to modify an entity outside of its selectional restriction—the result is infelicity in the form of a category mistake. Examples (20a) and (20b), below—from Russell and Chomsky, respectively—exhibit selectional violations.

- (20) a. # Quadruplicity drinks procrastination. (Russell 1940, pp. 166–167)  
b. # Colorless green ideas sleep furiously. (Chomsky 1957, p. 15)

In a theory void of selectional restrictions, the infelicity of utterances like those above is left unexplained. More importantly, the infelicity of examples (18b) and (19a) from Section 2.5, which also exhibit selectional violations, would not be predicated. Recall from Section 2.3 that the copredication test—and thus our definition of polysemy—relies on the existence of selectional restrictions. A polyseme is defined (via the copredication test) as having two distinct senses—each an individuated entity—and the predicates in a copredication construction must modify different senses in order for polysemy to be diagnosed.

Thus, crucially, if we were to rid our theory of selectional restrictions, polysemy would cease to be coherent, linguistically interesting (or even definable) phenomenon. If an abstract informational entity can *have a scratched cover* without issue, the entire literature on polysemy is just much ado about nothing. As such, the existence of selectional restrictions (in the form outlined above and in Section 2.3) is presupposed in the sections that follow.

## 3.2 The Explanandum

### 3.2.1 Overview

Let us review the data we are aiming to account for and specify what it is about these data that is in need of elucidation. Compare the utterances using *bottle* in example (21) with those using *cell* in example (22).<sup>13</sup>

- |      |    |  |                 |
|------|----|--|-----------------|
| (21) | a. | Ezra picked up [the bottle].                                   | CONTAINER       |
|      | b. | Ezra chugged [the bottle].                                     | CONTENT         |
|      | c. | Ezra picked up and chugged [the bottle].                       |                 |
| (22) | a. | [The cell] is prokaryotic.                                     | BIOLOGICAL UNIT |
|      | b. | [The cell] is run by a reactionary populist.                   | GROUP OF PEOPLE |
|      | c. | # [The cell] is prokaryotic and run by a reactionary populist. |                 |

So why is example (21c) felicitous when example (22c) is not? This crucial contrast between examples (21) and (22) leads us to the conclusion that *the bottle* in example (21c) is associated with both of its senses, while *the cell* in example (22c) cannot denote its two meanings within the context of a single utterance. As discussed in Section 2.4, the behavior of *cell* (and similar data exhibiting homophony or deferred reference) is not surprising. A given syntactic constituent has a single denotation, and any predicate modifying this constituent must be compatible with—i.e., able to modify—this denotation.

---

<sup>13</sup>*Bottle* and *cell* are both discussed in more detail in Sections 2.5.2 and 2.4.1, respectively.

It is the data in example (21)—specifically the felicitous copredication we observe in example (21c)—that is in need of explanation. The question one naturally arrives at is as follows: what do polysemes (and referential DPs exhibiting them) denote, such that the acceptability of the behavior exemplified in (21c)—felicitous copredication with two predicates whose selectional restrictions obligate them to apply to distinct senses of the constituent they modify—is predictable?

Let us first explicitly examine the null hypothesis (although we have argued against it implicitly since Section 2.3). The null hypothesis would hold that polysemes behave like any other noun. This is, in effect, the description of polysemy given by Lyons (1977b; 1995).<sup>14</sup> I will embrace the standard common-noun-as-predicate assumption—i.e., that singular count nouns denote sets of entities (Champollion 2017, pp. 42–43). We can represent singular, non-definite count nouns as follows:  $\llbracket \text{THING} \rrbracket = \{x \mid x \text{ is a thing}\}$ . So the denotation of *chalkboard* would simply be the set of all chalkboards. The denotation of a proper noun would just be a singleton. When discussing multiple-meaning phenomena (such as polysemy), this is called a “sense enumeration” approach (Asher 2011, pp. 62–64). Since this approach assumes the multiple senses exhibited by polysemes are completely disconnected, these denotations are problematic.

We can show that this is an untenable approach by comparing the monoseme *chalkboard*, above, with the polyseme *synagogue*.<sup>15</sup> Under the sense enumeration approach, the non-definite singular of a polyseme denotes the set of all individuals associated with either of its senses. So the denotation of *synagogue* would be the set containing all synagogues-qua-building and all synagogues-qua-institution. In the same way that some of the chalkboards  $c$  in  $\{c \mid c \text{ is a chalkboard}\}$  would be black and others would be green, some of the

---

<sup>14</sup>Under the null hypothesis, the distinction between homophony and polysemy is essentially reduced to etymology, with homophones having distinct etymological origins—generally corresponding with separate entries in a dictionary—and polysemes being etymologically related—typically corresponding with enumerated meanings within a single dictionary entry (Lyons 1977b, pp. 550–551; Lyons 1995, pp. 58–59). Recall that I explicitly argue against an etymology-based distinction in Section 2.4.1. Also note that Lyons’s goal is not to provide a novel analysis of polysemy, but rather to outline what he sees as the general consensus of the literature; this speaks to the prevalence of this conception of polysemy in the literature.

<sup>15</sup>See example (13) from Section 2.5.



synagogues  $s$  in  $\{s \mid s \text{ is a synagogue}\}$  would be buildings and others would be institutions. Note that this formally equates polysemy with hypernymy.

While this would make the correct predictions for constructions in which *synagogue* is modified by a single predicate, it would not predict the felicity we observe in copredication constructions wherein one predicate modifies a synagogue-qua-building and the other modifies a synagogue-qua-institution, such as example (13). The ultimate effect of this is that—though formally distinct—the theory would make the same predictions for polysemes that it makes for homophones, which examples (21c) and (22c) show to be incorrect.<sup>16</sup>

What we need is a denotation of polysemes in which the distinct senses of a polyseme are connected to a higher-level object in a consistent, structured manner. Sections 3.2.2 and 3.2.3, below, show that polysemous predicates are not well-described with the devices of our theory off-the-shelf, underscoring the problem presented by the polysemy data exemplified above in the present section.

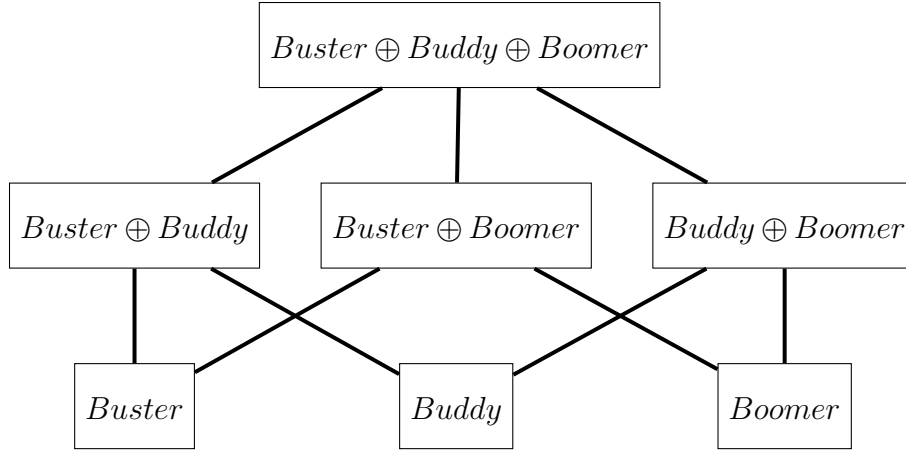
### 3.2.2 Differentiating Mereological Sums

Polysemes are definitionally associated with more than one entity (see Section 2.3); another variety of referential DP that exhibits this feature is plurals.<sup>17</sup> The standard account of both plurals and mass nouns is Link (1983), which provides a lattice-theoretic account of both. In this theory, plurals and mass nouns denote join semi-lattices, which are isomorphic to complete Boolean lattices. Such a lattice is illustrated in Figure 2, where the symbol  $\oplus$  represents the binary mereological sum operator.

---

<sup>16</sup>See also Sections 2.3 and 2.4.1.

<sup>17</sup>Although “inclusive” accounts of plurals include singular entities in their denotations of plurals, all account include pluralities in said denotations (Champollion 2017, pp. 43–44).



**Figure 2:** A Join Semi-Lattice

In Link’s theory, plurals and mass nouns are linked with the property of CUMULATIVE REFERENCE. Reference is cumulative for cases in which, if a property holds of  $x$  and holds of  $y$ , it also holds of  $x \oplus y$ , their mereological sum (Link 1983, p. 303). This is defined more formally in example (23), below.

$$(23) \quad \text{CUM}(P) \stackrel{\text{def}}{=} \forall x[P(x) \rightarrow \forall y[P(y) \rightarrow P(x \oplus y)]]$$

A predicate  $P$  is cumulative if and only if whenever it holds of two things, it also holds of their sum.

(Champollion 2017, p. 23)

Consider the example of the Linkian plural of *dog*. If  $\llbracket \text{dog} \rrbracket = \{Buster, Buddy, Boomer\}$ , then  $\llbracket \text{dogs} \rrbracket = \textcircled{*}dog$ , which is depicted by the lattice in Figure 2. The predicate *dogs* exhibits cumulative reference— $\text{CUM}(\textcircled{*}dog)$ —if and only if  $\forall x[\textcircled{*}dog(x) \rightarrow \forall y[\textcircled{*}dog(y) \rightarrow \textcircled{*}dog(x \oplus y)]]$ . And this is in fact what we observe. For example,  $\textcircled{*}dog(Buster \oplus Boomer)$  is true,  $\textcircled{*}dog(Buddy \oplus Boomer)$  is true, and it follows that  $\textcircled{*}dog(Buster \oplus Buddy \oplus Boomer)$  is true.

Plurals and mass nouns are differentiated by their atomicity. For plurals, the lattice is built of atoms representing singular individuals; the plural thereof is the algebraic closure of the denotation of the singular. For mass nouns, the units being summed are portions of matter (Link 1983, p. 307).

But the properties of the structures denoted by plurals and mass nouns (in the Linkian account presented here) crucially do not appear to fit the data discussed in Sections 2.5 and 3.2.1. That is, the way in which plural- and mass- denoting predicates are associated with multiple entities and the way in which polysemous predicates are associated with multiple entities must be distinct. Compare examples (24a) and (24b), which contrast plurals and polysemes.

- (24) a. CONTEXT: *pointing to a group of 2 Americans and 2 Russians*  
 # [Those people] are Russian<sub>RUSSIANS</sub>. (here, # = false in given context)
- b. Ari drank<sub>CONTENT</sub> [the bottle] (before recycling<sub>CONTAINER</sub> [it]).

The # symbol in this example indicates a different judgement than either of its uses presented thus far. Here, it indicates that the utterance is false in the given context. The falsity of this example is driven by a failure of cumulative reference. Example (24a) exhibits a plural DP—*those people*—which denotes a sum. The predicate *Russian* is only true of a proper subset of that sum. Thus, given the definition of cumulative reference above, we would (correctly) predict infelicity here. Conversely, example (24b)—which exemplifies the polysemous predicate *the bottle*—is both felicitous and true. Analogous to example (24a), the predicate *drank* only applies to a proper subset of the entities with which the modified predicate is associated. However, unlike example (24a), it does so successfully in this case.

The discussion above indicates that polysemous predicates do not require cumulative reference, a property that distinguishes them from (the Linkian denotations of) plural and mass predicates—two other sorts of DP in our theory associated with multiple entities.

### 3.2.3 Differentiating Synthetic Predicates

It is also worth evaluating how our theory handles singular nouns that have distinct parts, such as *chair*. Like polysemes (as well as plurals and mass nouns), these are seemingly associated with more than one individual. Continuing with the example of *chair*, our domain of entities ( $D_e$ ) includes not only *chair*, but also individuals such as *armrest*, *cushion*, and *chair leg*. The case of

*chair* is ostensibly similar to the situation with *bottle* because both *bottle qua container* and *the wine therein* are also individuals in our domain of entities. However, there is a critical difference.

The denotation of *the chair* is not directly associated with its aforementioned parts. This is because nouns like *chair* are “ontologically emergent” with respect to their parts, in that they exhibit properties “over and above” those of their parts (Bennett 2017, pp. 11–12). I propose we call these SYNTHETIC ENTITIES. A property can hold of synthetic predicate like *the chair* that does not result directly from the properties of its parts; this is not the case for polysemous predicates like *the bottle*. While a property can hold of a synthetic predicate by virtue of holding of one or more of its parts, this is the only way for a property to hold of a polyseme, as they are not emergent with respect to their parts.

Despite the important contrast discussed above, there is also a crucial similarity between polysemous predicates and synthetic predicates: they both exhibit STRUCTURED PARTHOOD. Champollion distinguishes “unstructured parthood” and “structured parthood”; the former applies to “collections without internal structure”, while the latter is defined as the “the relation that holds between singular entities and their parts” (2017, pp. 12–13). Note that the term “unstructured parthood” is somewhat confusing. For example, Linkian plurals and mass nouns—which we showed to be distinct from polysemes in Section 3.2.2—certainly have ‘structure’ in the colloquial sense of the term; however, these are sums and are thus an example of unstructured parthood.

### **3.3 Theoretical Desiderata**

Let us review where this leaves us regarding descriptive and theoretical desiderata. Polysemes—such as *bottle*—exhibit two (or more) distinct senses, which are themselves individuated entities. This section has shown that polysemous predicates are not well-described with the devices of our theory off-the-shelf. Although they exhibit important similarities to homophones, hypernyms, plurals, mass nouns, and synthetic predicates, polysemous predicates nonetheless require an approach distinct from those our theory applies to the aforementioned

phenomena.

Unlike with homophones and cases of deferred reference, modification of multiple senses of polysemes in copredication environments is felicitous (see Section 2.4). Though formally distinct from homophony and deferred reference, treating polysemes like hypernyms—that is, defining the denotation of the non-definite singular of a polyseme as the set containing all individuals associated with either of its senses—results in the same incorrect predictions (see Section 3.2.1). Plurals and mass nouns require cumulative and divisive reference, differentiating them from polysemes (see Section 3.2.2). Synthetic entities are ontologically emergent with respect to their parts and the predicates denoting them are thus not directly associated with those parts—only the emergent whole, distinguishing these from polysemous predicates, as well (see Section 3.2.3).

We thus need a new complex/higher-level entity of some sort with the distinct senses of polysemes as its “parts” to serve as the denotation of polysemous predicates. As theoretically neutrally as possible, I will refer to such entities as COMPOSITE ENTITIES and such “parts” as COMPONENT ENTITIES. I now turn to specifying the desideratum for polysemous predicates to which the discussion above leads us. They exhibit parthood in the colloquial sense of the term, but they do so in a way that is not compatible with the varieties of parthood exhibited by Linkian plurals and mass nouns or synthetic predicates. My description of this distinction uses the concept of QUANTIZED REFERENCE, defined in example (25), below.

$$(25) \text{ QUA}(P) \stackrel{\text{def}}{=} \forall x [P(x) \rightarrow \forall y [y < x \rightarrow \neg P(y)]]$$

A predicate  $P$  is quantized if and only if whenever it holds of something, it does not hold of any of its subparts.

(Krifka 1989; Champollion and Krifka 2016, p. 380)

Like synthetic predicates (§3.2.3)—but in contrast with Linkian plurals and mass nouns (§3.2.2)—polysemous predicates are mereologically quantized. That is, there are mereological parts of *a book* such as *its spine*, *its cover*, *its tenth page*, etc. that come together to form an emergent, singular whole. However, if we considered component entities (for *a book*, the physical

object and its informational content) to be mereological parts, quantized reference would not hold of polysemous predicates because  $\neg P(y)$  would not be true when  $y$  was a component. That is, the variety of parthood instantiated by the component entities (with respect to the composite entity denoted by a polysemous predicate) exhibits something akin to—but, as discussed below, distinct from—DIVISIVE REFERENCE, defined in example (26).<sup>18</sup>

$$(26) \text{ DIV}(P) \stackrel{\text{def}}{=} \forall x[P(x) \rightarrow \forall y[y < x \rightarrow P(y)]]$$

A predicate  $P$  is divisive if and only if whenever it holds of something, it also holds of each of its proper parts.

(Champollion 2017, p. 23)

Note that quantized reference (example 25) and divisive reference (example 26) differ only by the negation of  $P(y)$  for quantized reference, making these two higher-order nominal properties mutually exclusive. This necessitates that the variety of parthood instantiated by *the spine (of a book)* and the variety instantiated by *the informational content (of a book)* be distinct. The symbol  $<$  represents the former variety (henceforth PARTHOOD). To more easily differentiate them, let us use a different symbol—perhaps  $\subseteq$ —to represent the analogous COMPONENTHOOD relation that holds between component senses and polysemes. Polysemous predicates exhibit quantized reference with respect to parthood, but not with respect to componenthood. Were we to replace the  $<$  in the definition of divisive reference with  $\subseteq$ , then it would (definitionally) hold of polysemous predicates.

Several proposals have been made in a similar vein. I will briefly highlight two that I find particularly notable: Pustejovsky (1995) and Asher (2011), which was referenced frequently in Section 2. In Pustejovsky’s GENERATIVE LEXICON theory, a lexical entry is composed of four “levels of representation”: ARGUMENT STRUCTURE, EVENT STRUCTURE, QUALIA STRUCTURE, and LEXICAL INHERITANCE STRUCTURE (Pustejovsky 1995, p. 61). The (approximate) Pustejovskian analogs to what I have called component entities are listed as separate arguments in the argument

---

<sup>18</sup>Divisive reference is the boolean dual of cumulative reference (Champollion and Krifka 2016, pp. 379–380). So instead of saying that Linkian plurals and mass nouns ‘require’ cumulative reference—as I did in Section 3.2.2—we can simply say that they exhibit divisive reference.

structure. A concept (approximately) analogous to what I have called composite entities are “dotted objects”, which are listed in the qualia structure (Pustejovsky 1995, pp. 95–97, 100–101).<sup>19</sup>

Asher (2011) provides a meticulous theoretical account utilizing his theory of TYPE COMPOSITION LOGIC (TCL), a richly typed system somewhat akin to the more recent MODERN TYPE THEORIES (MTTs) developed in Chatzikyriakidis and Luo (2020).<sup>20</sup> Asher’s TCL includes several sorts of foundational types, but the type most relevant for us is the complex dot type, which he uses to represent “dual aspect nouns”, which correspond to what I have called polysemes (Asher 2011, pp. 103–104, 130–132). This complex type is composed of two simple (or primitive) types, each of which is the type of an aspect of the complex dot type. These “aspects” are roughly analogous to what I call component entities and are represented as distinct algebraic pullbacks of a dot type (Asher 2011, pp. 152–155).

Both of the aforementioned proposals are functional only within each author’s specific theory of lexical semantics (Pustejovsky’s Generative Lexicon and Asher’s Type Composition Logic). As the brief overviews above indicate, both formalisms are quite involved; they are not specific to polysemy, but rather are independent theories of lexical semantics. Thus, to adopt their formalism for polysemy, one must learn and adopt their entire paradigm. This is less than ideal.<sup>21</sup> Future research should explore formalisms that are more broadly applicable outside of these somewhat niche theories.

---

<sup>19</sup>The qualia structure itself is internally complex, with four “modes of explanation”: CONSTITUTIVE, FORMAL, TELIC, and AGENTIVE. The dotted object is relevant to all of these, so it is listed above the first quale (Pustejovsky 1995, pp. 85–86, 100–101).

<sup>20</sup>Richly typed theories ultimately developed from Martin-Löf (1984)’s “Intuitionistic Type Theory”, which aimed to replace set theory as the base of our semantic model. Such theories differ from Montague Grammar in that, instead of using only types *e* and *s*, each lexeme is its own unique type. Note that modern instantiations of Montagovian Semantics also differ from Montague’s original papers in their use of types, with some eschewing them completely (“type reductionism”) and others using an assortment of additional non-functional types (“type proliferation”); among the latter group, the number of types varies significantly (Rett 2022, pp. 277–280).

<sup>21</sup>For example, the mathematical complexity of Asher’s theory stems from the need to use topoi (which are closed under pullbacks, the structure mentioned above) as his categorial model because within this category, “the standard laws of intuitionistic quantification are sound” (Asher 2011, p. 125). This is understandably important within Asher’s framework, but quite inaccessible to and broadly unimportant for most linguists working within the Montagovian tradition (and certainly most working outside of it).

## 4 On the Canonical Empirical Domain

The present section reevaluates the empirical domain of the phenomena discussed herein; that is, the set of terms diagnosed as polysemes via the copredication test outlined in Section 2.3. Specifically, I argue that the set of polysemes is plausibly larger than the canonical account assumes and that the composition of this set is not possible to determine with any precision due to the imprecision and circularity of its definition. Consider the following example of a canonically polysemous reference alternation.

- (27) [The tablets] were made of lapis lazuli and informed our understanding of the Akkadian legal system.

In example (27), the DP *the tablets* exhibits a reference alternation between a set of physical objects—tablets made of lapis lazuli—and a set of informational/conceptual objects—the information conveyed by the writings thereupon. This, like *book* or *bottle*, is a reference alternation that is rather uncontroversial and widely accepted to be polysemous. Compare this example with the following.

- (28) [Jon] is handsome and knowledgeable about Georgian politics.

Examples (27) and (28), above, both felicitously exhibit the conjunction of two predicates that both modify the same constituent. However, this construction is (canonically) considered polysemy-diagnosing copredication in the former and simple conjunction in the latter. This fact alone is not particularly notable; the distinction between copredication and simple conjunction was discussed in Section 2.3. However, in this case, the marked similarity between examples (27) and (28) should give us pause.

The predicates *made of lapis lazuli* and *handsome* in examples (27) and (28), respectively, both select for a physical entity. Similarly, the predicates *informed our understanding of the Akkadian legal system* and *knowledgeable about Georgian politics* are both restricted in application informational entities. Unlike *tablet* from example (27), however, person-denoting



DPs such as *Jon* from example (28) are not—to the best of my knowledge—considered polysemous anywhere in the literature. Given this contrast, the striking similarity of the selectional restrictions exhibited by the predicates in example (27) and those in example (28) presents a troubling inconsistency.

In both cases, a predicate selecting for a physical object and a predicate selecting for an informational object are conjoined felicitously. As *tablet* is a canonical polyseme (of the same variety as *book*), it follows that the aforementioned selectional restrictions do not overlap on a simplex entity. Conversely, as *Jon* is not canonically polysemous, it follows that the essentially identical selectional restrictions do, in fact, overlap and that a simplex entity denoted by *Jon* is in this intersection. Again, this discrepancy is in need of explanation or remedy.

I now turn to outlining some of the problems with our diagnostic that contribute to the uncertainty described above. As discussed in Sections 2.3 and 3.1, the copredication test is dependent upon a rigid conception of selectional restrictions. This, in turn, requires a concretely established domain of entities ( $D_e$ ), as selectional restrictions are defined by subsets thereof. Having an enumerated domain of entities presupposes having a clear, coherent answer to the question: *What makes two senses distinct?* and having already applied this to any ambiguous cases. Thus, any uncertainty at any of the aforementioned points may result in uncertainty about the class of polysemes.

Before pursuing this further, let us assume for a moment that we manage to overcome the challenges above; we are completely confident in the composition of our domain of entities. Even under these circumstances, the copredication diagnostic is not without issue. The primary linguistic intuition utilized in the present paper is felicity judgements regarding constructions with conjoined predicates. However, as discussed in Section 2.3 (and illustrated in Figure 1), the acceptability of these constructions only differentiates polysemy from homophony. The distinction between polysemy and monosemy requires us to differentiate simple conjunction (wherein the two predicates modify an entity in the intersection of their selectional restrictions) and copredication (wherein the two predicates each modify a simplex entity outside of the other

predicate's selectional restriction and these entities are the distinct senses of a polysemous predicate).

But how—in practice—do we differentiate copredication from simple conjunction? This depends on our epistemic commitments about selectional restrictions. Remember that, for now, we are assuming a transparently and universally defined  $D_e$  and that the selectional restriction of a given predicate is a subset of  $D_e$ . So if two predicates felicitously conjoin and the intersection of their selectional restrictions does not contain a simplex entity to which the argument modified by the conjoined predicates may refer, then we have a case of copredication. While the felicity of the utterance is a linguistic judgement, the latter criterion regarding selectional restrictions is metaphysical; it is about sets of entities—not sets of referring expressions.

Normally, when we are not discussing polysemy, the aforementioned metaphysical judgement has a parallel linguistic one: category mistakes. As described in Sections 2.3 and 3.1, a category mistake is the result of the violation of a selectional restriction. So determining whether a given entity is in the intersection of the selectional restrictions of two predicates is straightforward, as is determining whether the selectional restriction of a given predicate contains two different entities. The utterances in examples (29) and (30) illustrate this.

- (29) a. [The flower] bloomed.  
b. # [The flower] chirped.
- (30) a. [The bird] chirped.  
b. # [The flower] chirped.

Crucially, polysemes sabotage these linguistic judgements by camouflaging the selectional violations. The utterances in example (31) illustrate this. Neither (31b) nor (31c) provide us with sufficiently precise information about the entities in the selectional restrictions of *picked up* and *chugged*, as the referring expression *the bottle* can refer to two different entities. (Again, recall that we are assuming a universally and transparently defined  $D_e$  for now.)

- (31) a. Ezra picked up and chugged [the bottle].  
 b. Ezra picked up [the bottle].  
 c. Ezra chugged [the bottle].

One option is to replace the intended sense with a Fregean *Sinn* thereof—that is, with a different referring expression that uniquely denotes the intended sense (to the exclusion of the other sense).<sup>22</sup> This is what I chose to do when presenting the data in Section 2.5.2. Examples (18) and (19) from that section are repeated below as (32) and (33). These recover the linguistic judgements needed to declare that example (31a) is an instance of copredication rather than simple conjunction.

- (32) a. ✓ Ezra picked up [the bottle qua container].  
 b. # Ezra chugged [the bottle qua container].
- (33) a. # Ezra picked up [the wine in the bottle].  
 b. ✓ Ezra chugged [the wine in the bottle].

Let us return to the case of *Jon*—example (28)—from earlier in this section. Recall that *Jon*, though not canonically polysemous, exhibited referential behavior analogous to canonically polysemous object/information alternations. The utterance pairs in examples (34), (35), and (36), below, illustrate this argument concisely with new data.

- |         |  |                 |
|---------|--|-----------------|
| (34) a. | [The scroll] is ancient.                 | PHYSICAL OBJECT |
| b.      | [The professor emeritus] is ancient.     | PHYSICAL OBJECT |
| (35) a. | [The scroll] is informative.             | INFORMATION     |
| b.      | [The professor emeritus] is informative. | INFORMATION     |

---

<sup>22</sup>See Section 2.2.

- (36) a. [The scroll] is ancient and informative.                   PHYS. OBJ./INFO. OBJ.  
       b. [The professor emeritus] is ancient and informative.   PHYS. OBJ./INFO. OBJ.

*Scroll* is a canonical example of polysemy which exhibits the same reference alternation as *tablets* did in example (27). *The professor emeritus*—like *Jon* in example (28)—is not considered polysemous anywhere in the literature despite exhibiting this very same reference alternation (between a physical object and an informational object). In examples (34), (35), and (36), I have used identical predicates to modify *the scroll* and *the professor emeritus*, eliminating any doubt that the selectional restrictions thereof are identical. These data underscore the troubling inconsistency presented by classifying terms like *scroll* as polysemes without classifying terms like *professor emeritus* the same way.

Given that the relevant distinction is between monosemy and polysemy, it ultimately comes down to how one chooses to differentiate polysemy-diagnosing copredication from simple conjunction. This is intimately connected to one’s conception of the domain of entities, selectional restrictions, and the relations therebetween. Based on the way I have defined these herein—which, although more specific and concrete, is at its core in line with the polysemy literature—the distinction between terms like *Jon* or *the professor emeritus* and those like *tablet* or *scroll* is unsubstantiated, presenting a problematic inconsistency.

So how can this be? I do not have the data required to answer this question, but it is nonetheless worth enumerating (some of) the issues it poses as possible future research questions. What if  $D_e$  is not, in fact, defined clearly and universally? Consequently, what if the distinction between words with multiple senses and those with only one sense is not determined, invariable, and transparent? This would allow for the possibility of inter-speaker variation, contextual variation within a speaker, or both with respect to judgements of what constitutes copredication (and thereby polysemy).

## 5 On Grinding

In addition to the range of polysemous  $e \sim e$  reference alternations I have discussed thus far, there is another phenomenon often discussed in the polysemy literature that is also restricted to individuals. It is known as GRINDING, referencing the process via which a count noun is transformed into a mass noun. The nomenclature comes from Pelletier (1975; 1979)'s "Universal Grinder". This work resulted from Pelletier's realization that common nouns could not simply be divided between mass and count, as they could shift between countability classes (Pelletier 1975, p. 452). This is illustrated in example (37), adapted from the discussion in Pelletier (1975, p. 456).

- (37) a. Jeff Pelletier put [a man] into the Universal Grinder.  
b. Now there is [man] all over the floor.

Distinguishing grinding from the version of polysemy I have focused on herein is not a particularly marked departure from the norm. Grinding—in contrast with the various sense alternations within individual-individual ( $e \sim e$ ) polysemy that we saw in Section 2.5—has been argued to constitute a meaningfully distinct subtype of polysemy in the literature. This was argued most explicitly by Frisson and Frazier (2005), a psycholinguistic study cited widely in the polysemy literature that argues for a bifurcation of the phenomenon into TRUE POLYSEMY and RULE-BASED POLYSEMY (Frisson and Frazier 2005, p. 280).

Frisson and Frazier (2005)'s 'true polysemy' label refers to the variety of polysemy associated with the examples discussed in Section 2.5. Example (12b)—repeated below as (38)—is an instance of this variety.

- (38) [The dictionary] is very bulky but also very informative.

(Frisson and Frazier 2005, p. 279)

Grinding falls under their 'rule-based polysemy' label, as Frisson and Frazier argue that one of the alternating senses—the post-grinding sense—is derived from the other, more basic

sense. Grinding is exemplified in detail, below. Frisson and Frazier provide support for differentiating rule-based polysemes from true polysemes with evidence from psycholinguistic experiments<sup>23</sup>, showing that there is no discernible processing penalty for either sense of terms in the true polysemy class, while there is a rather marked attendant cost for nouns that have undergone grinding (Frisson and Frazier 2005, pp. 279, 285–287; Frazier and Rayner 1990).

Two varieties of grinding are distinguished in the literature: TRUE GRINDING and CONVENTIONALIZED GRINDING. I will use the term ‘true grinding’ to refer to the variety exemplified by Pelletier in his initial presentation of the Universal Grinder (Pelletier 1975, p. 456). This type is rather straightforward: a very large portion of count nouns can be used without the accompanying count-specific morphosyntactic features and the result is a substance interpretation of the noun.<sup>24</sup> Consider the examples in (39), below. Both *armadillo* and *hat* are count nouns, but in (39a) and (39b), respectively, they are interpreted as substances rather than individuated entities (Grimm 2018, p. 566).

- (39) a. There is [armadillo] all over the road. TRUE GRINDING  
*An armadillo was run over.*
- b. There is [hat] all over the floor. TRUE GRINDING  
*A hat was shredded.* (Grimm 2018, p. 566)

The term ‘conventionalized grinding’ does not come directly from the literature, either, but the nomenclature stems from Nunberg (2004, pp. 345, 351) and—less directly—from Grimm (2018, pp. 565–567). In cases of conventionalized grinding, the countability class of the noun also changes from count to mass; however, the resulting interpretation is distinct from that of true grinding. Rather than the simple object-input to substance-thereof-output shift found in cases of true grinding, the resulting output is conventionalized (i.e., it is not dictated directly and solely by ontological properties, but rather by custom). The canonical example of this type is

---

<sup>23</sup>Subjects’ eye movements were recorded while reading experimental items. Reading times, fixation and gaze durations, and multiple passes were recorded.

<sup>24</sup>Note that this is not the case for every count noun in the lexicon. We cannot do this with terms like *kilogram*, for instance (Grimm 2018, p. 567).

animal-to-meat grinding. This is exhibited in example (40), below.

(40) Leah ordered [the chicken] for dinner.

CONVENTIONALIZED

It is worth noting that work on grinding is not limited to the polysemy literature; in fact, work on grinding has developed primarily in the literature surrounding grammatical number and countability.<sup>25</sup> While true grinding is commonly discussed in the latter, the polysemy literature focuses almost exclusively on conventionalized grinding. This is highlighted by Frisson and Frazier (2005, p. 280), which explicitly states, "... [examples of conventionalized grinding] are the ones employed in the experiments [herein] and it is only these terms that we take to be in the scope of the present investigation." The authors do not provide a discussion of their reason for this and do not make any explicit claims about the need (or lack thereof) to make this distinction formally.

It is also worth highlighting Grimm (2018).<sup>26</sup> Grimm considers conventionalized grinding to be an example of polysemy, but is unique in explicitly claiming that true grinding is an entirely separate phenomenon (Grimm 2018, §5.1). He posits that the output of true grinding results from the same variety of pragmatic reasoning that allows for deferred reference (Grimm 2018, pp. 565–567).<sup>27</sup> Just as Nunberg (2004, pp. 351–352) concludes that "no one would seriously propose" that a person who orders a ham sandwich is listed in the lexical entry for HAM SANDWICH, Grimm claims that no one should think the universally ground (substance) form of any physical object should be listed in its lexical entry. In Grimm's view, the outputs of both true grinding and deferred reference are extralexical readings and thus fall in the realm of pragmatics (Grimm 2018, pp. 566–567).

To recap the empirical landscape, "grinding" can refer to two distinct classes of sense alternation: true grinding, which results in the output of Pelletier's "Universal Grinder", and

---

<sup>25</sup>Pelletier (1975)—the paper which originated the concept—belongs in this category, as does Grimm (2012; 2018).

<sup>26</sup>Grimm's paper proposes a novel theory of countability, so polysemy is not his primary focus. However, he makes claims relevant to the classification thereof while addressing potential counterarguments to his analysis.

<sup>27</sup>See example (10) from Section 2.4.2, which illustrated deferred reference.

conventionalized grinding, which exhibits the same count-to-mass shift, but whose output sense is determined by convention. Example (41), below, illustrates both of these varieties with the referential DP *that chicken*. Example (41a) exhibits the sense before grinding occurs; example (41b) exhibits the result of true grinding; and example (41c) exhibits the result of conventionalized animal-to-meat grinding.

- (41) a. [That chicken] is sitting on her eggs. *animal* | PRIMARY MEANING  
 b. [That chicken] is all over the road. *substance* | TRUE GRINDING  
 c. [That chicken] is delicious. *meat* | CONVENTIONALIZED

Although I show that instances of grinding do exhibit felicitous copredication—contra Frisson and Frazier (2005, p. 279)—I argue that the relation between the alternating “senses” is substantively different from that between the alternating senses of standard polysemes. A unique feature of grinding is that the acceptability of copredication is sensitive to tense; this is because the predicates cannot simultaneously modify the referential DP, as it cannot have two distinct countability classes at a single point in time. One can often sharpen sensitivity to this distinction with the use of *and then* or *and now* rather than the bare conjunction, making explicit its temporal effects; this typically results in increased acceptability and fluidity. Consider the examples in (42) and (43), below.

- (42) *CONTEXT: Mary had a little lamb. Mary got hungry and butchered it.* CONVENTIONALIZED  
 a. Mary played with and (then) carved [the lamb].  
 b. # Mary is playing with and carving [the lamb].  
 (*adapted from Frisson & Frazier 2005, p. 279*)

- (43) *CONTEXT: A description of a chicken before and after a tragic accident.* TRUE GRINDING  
 a. [The chicken] was mean and(–later–)gooey.  
 b. # [The chicken] is mean and gooey.



The data above are not uncontroversial, but they do appear to hold for the speakers I have informally surveyed. Example (42a) is adapted from Frisson and Frazier (2005, p. 279), which marks this utterance as unacceptable. Neither I nor the speakers I consulted find this to be the case. It is also noteworthy that (42a) is the only example I have found in the literature regarding the copredication of grinding terms, despite copredication being an important and common test in work on polysemy. I am unaware of any analysis of copredication with true polysemy, which example (43) illustrates. Recall from above that Grimm (2018) proposes a distinction between ANIMAL-TO-MEAT grinding like *lamb* in example (42) and universal grinding, such as *chicken* in example (43). The data presented above do not support such a split, as both categories exhibit the same behavior.

Examples (42b) and (43b) highlighted the need to separate grinding from standard polysemy (c.f. the data in Section 2.5), as these examples showed that copredication fails in present-tense (simultaneous) contexts. I suggest that this is because the denotation of a noun exhibiting grinding is not the same as that of a polyseme—nor any other kind of complex object. Rather, the relevant DP denotes a standard atomic object. Entities often exhibit different properties at different times—properties that can be mutually exclusive. Grinding is simply a special case in which the property that changes is the noun’s countability class, causing a constraint on the noun’s property times that is explicitly revealed in copredication constructions like those found in examples (42b) and (43b).<sup>28</sup>

## 6 Conclusion

In this paper, I have presented and problematized the standard account of polysemy. In my presentation of the canon (Section 2), I have aimed to make the implicit assumptions found in the literature explicit, specifically regarding the diagnostic for polysemy and the relation thereof to homophony. This section also sets up the historical context of the canonical account

---

<sup>28</sup>See O’Leary (2022, Ch. 2, §3) for a detailed discussion of nominal property times.

and makes explicit the non-standard use of terms like *sense* used therein. The canonical data is presented in this section, as well. In critiquing the canon (Sections 3, 4, and 5), I have aimed to show that polysemous predicates are not well-described with the devices of our theory off-the-shelf. Moreover, the standard diagnostic—even when interpreted as explicitly and generously as possible—does not produce a concrete, coherent set of results. I have also shown that grinding, though usually discussed as a variety of polysemy in the literature, is better described as a distinct, independent phenomenon.

This paper also points to several directions for future research. For the specific individual-individual ( $e\sim e$ ) polysemy discussed herein, a compositional account within a standard Montagovian framework (as opposed to cognitive, relevance-theoretic, or nouns-as-types frameworks) is needed. Outside of this variety of polysemy, further work on grinding and non-individual-individual polysemies is needed; this latter group includes individual-kind ( $e\sim k$ ), individual-degree ( $e\sim d$ ), and individual-event ( $e\sim v$ ) reference alternations.

## References

- Asher, Nicholas (2011). *Lexical Meaning in Context: A Web of Words*. Cambridge, UK: Cambridge University Press.
- Bennett, Karen (2017). *Making Things Up*. Oxford, UK: Oxford University Press.
- Bergmann, Merrie (1977). *Logic and Sortal Incorrectness*. In: *The Review of Metaphysics* 31.1.
- Bréal, Michel (1883). *Les lois intellectuelles du langage: Fragment de sémantique*. In: *Annuaire de l'association des études grecques en France* 17.
- (1897). *Essai de Sémantique*. Paris, France: Hachette.
- Champollion, Lucas (2017). *Parts of a whole: Distributivity as a bridge between aspect and measurement*. Oxford University Press.
- Champollion, Lucas and Manfred Krifka (2016). *Mereology*. In: “Cambridge Handbook of Formal Semantics”. Ed. by Maria Eloni and Paul Dekker. Cambridge, UK: Cambridge University Press, pp. 369–388.
- Chatzikyriakidis, Stergios and Zhaohui Luo (2020). *Formal Semantics in Modern Type Theories*. London, UK: Wiley.
- Chomsky, Noam (1957). *Syntactic Structures*. Amsterdam, The Netherlands: Walter de Gruyter.
- (1965). *Aspects of the Theory of Syntax*. Cambridge, Massachusetts: MIT University Press.
- (2000). *Minimalist Inquiries: The Framework*. In: “Step by Step: Essays in Minimalist Syntax in Honor of Howard Lasnik”. Ed. by Robert Martin, David Michaels, and Juan Uriagereka. Cambridge, Massachusetts: MIT University Press, pp. 89–155.
- Copestake, Ann and Ted Briscoe (1995). *Semi-productive polysemy and sense extension*. In: *Journal of Semantics* 12.1.
- Cruse, D. A. (1986). *Lexical Semantics*. Cambridge University Press.
- Frazier, Lyn and Keith Rayner (1990). *Taking on semantic commitments: Processing multiple meanings vs. multiple senses*. In: *Journal of Memory and Language* 29.
- Frege, Gottlob (1892 [1948]). *Sense and Reference*. In: *The Philosophical Review* 57.3, pp. 209–230.

- Frisson, Steven and Lyn Frazier (2005). *Carving up word meaning: portioning and grinding*. In: *Journal of Memory and Language* 53.
- Grimm, Scott (2012). *Number and Individuation*.
- (2018). *Grammatical Number and the Scale of Individuation*. In: *Language* 94.3.
- Krifka, Manfred (1989). *Nominal Reference, Temporal Constitution and Quantification in Event Semantics*. In: “Semantics and Contextual Expression”. Ed. by Renate Bartsch, J. van Benthem, and P. van Emde Boas. Foris Publications, pp. 75–115.
- Link, Godehard (1983). *The logical analysis of plurals and mass terms: A lattice-theoretic approach*. In: “Meaning, Use, and the Interpretation of Language”. Ed. by Rainer Bäuerle, Christoph Schwarze, and Arnim von Stechow. de Gruyter.
- Lyons, John (1977a). *Semantics: Volume I*. Cambridge, UK: Cambridge University Press.
- (1977b). *Semantics: Volume II*. Cambridge, UK: Cambridge University Press.
- (1995). *Linguistic Semantics: An Introduction*. Cambridge, UK: Cambridge University Press.
- Magidor, Ofra (2013). *Category Mistakes*. Oxford, UK: Oxford University Press.
- Martin-Löf, P. (1984). *Intuitionistic Type Theory*. Naples, Italy: Bibliopolis.
- Nunberg, Geoffrey (1995). *Transfers of Meaning*. In: *Journal of Semantics* 12.
- (2004). *The Pragmatics of Deferred Interpretation*. In: “The Handbook of Pragmatics”. Wiley Blackwell.
- O’Leary, Maura Christine (2022). *About Time: Lexical, Structural, and Discourse Constraints on the Temporal Interpretation of Nominal Predicates*. PhD thesis. UCLA.
- OED (2022). *Oxford English Dictionary*. Oxford University Press.
- Pelletier, F. (1975). *Non-singular reference: some preliminaries*. In: *Philosophia* 5.4.
- (1979). *Mass terms: some philosophical problems*. In: ed. by F. Pelletier. Dordrecht: Reidel. Chap. Non-singular reference: some preliminaries.
- Prandi, Michele (2016). *Selection Restrictions as Ultimate Presuppositions of Natural Ontology*. In: *Topoi* 35.
- Pustejovsky, James (1995). *The Generative Lexicon*. Cambridge, Massachusetts: MIT Press.

Rett, Jessica (2014). *The Polysemy of Measurement*. In: *Lingua* 142.

– (2022). *A Typology of Semantic Entities*. In: “Linguistics Meets Philosophy”. Ed. by Daniel Altshuler. Oxford, UK: Oxford University Press.

Russell, Bertrand (1940). *An Inquiry into Meaning and Truth*. New York, USA: W. W. Norton & Company.

Schlenker, Philippe (2011). *Presupposition Projection: Two Theories of Local Contexts, Part I*. In: *Language and Linguistics Compass* 5.12.

Sweetser, Eve (1990). *From Etymology to Pragmatics*. Cambridge University Press.