

Verbal gerunds in English

A case study in natural language ontology
and referentiality

Zi Huang

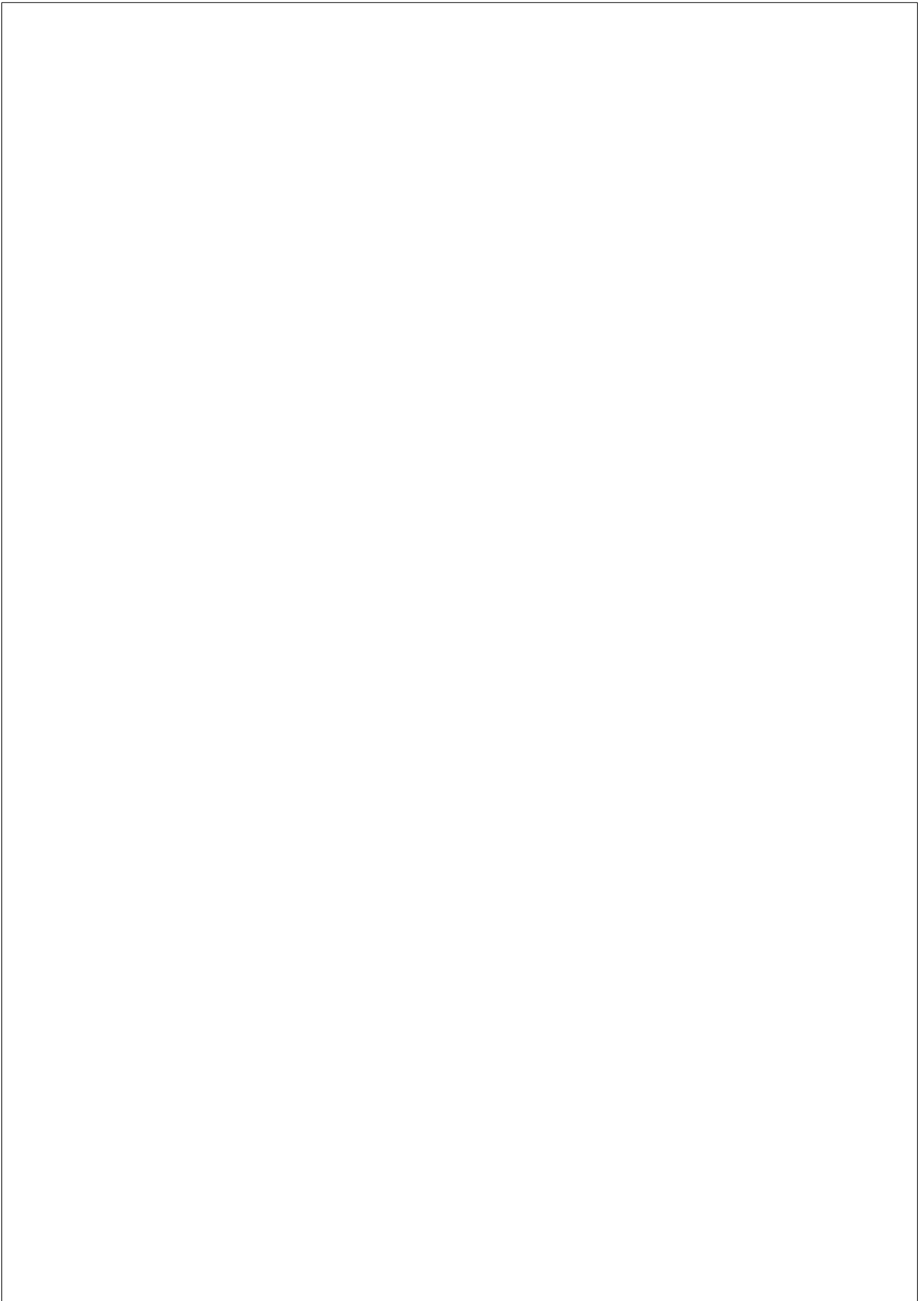
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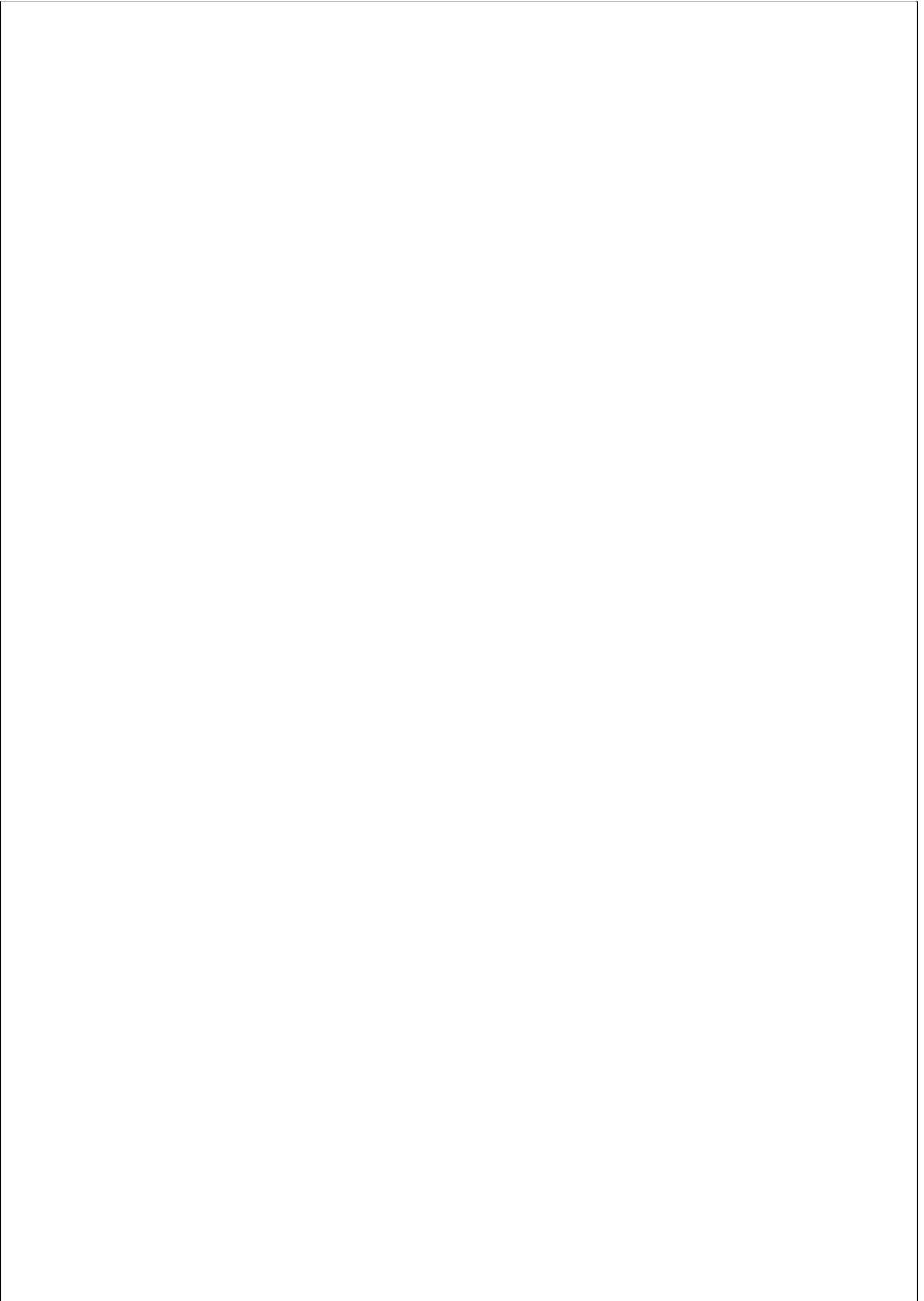
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To my parents
and to Justin the lion



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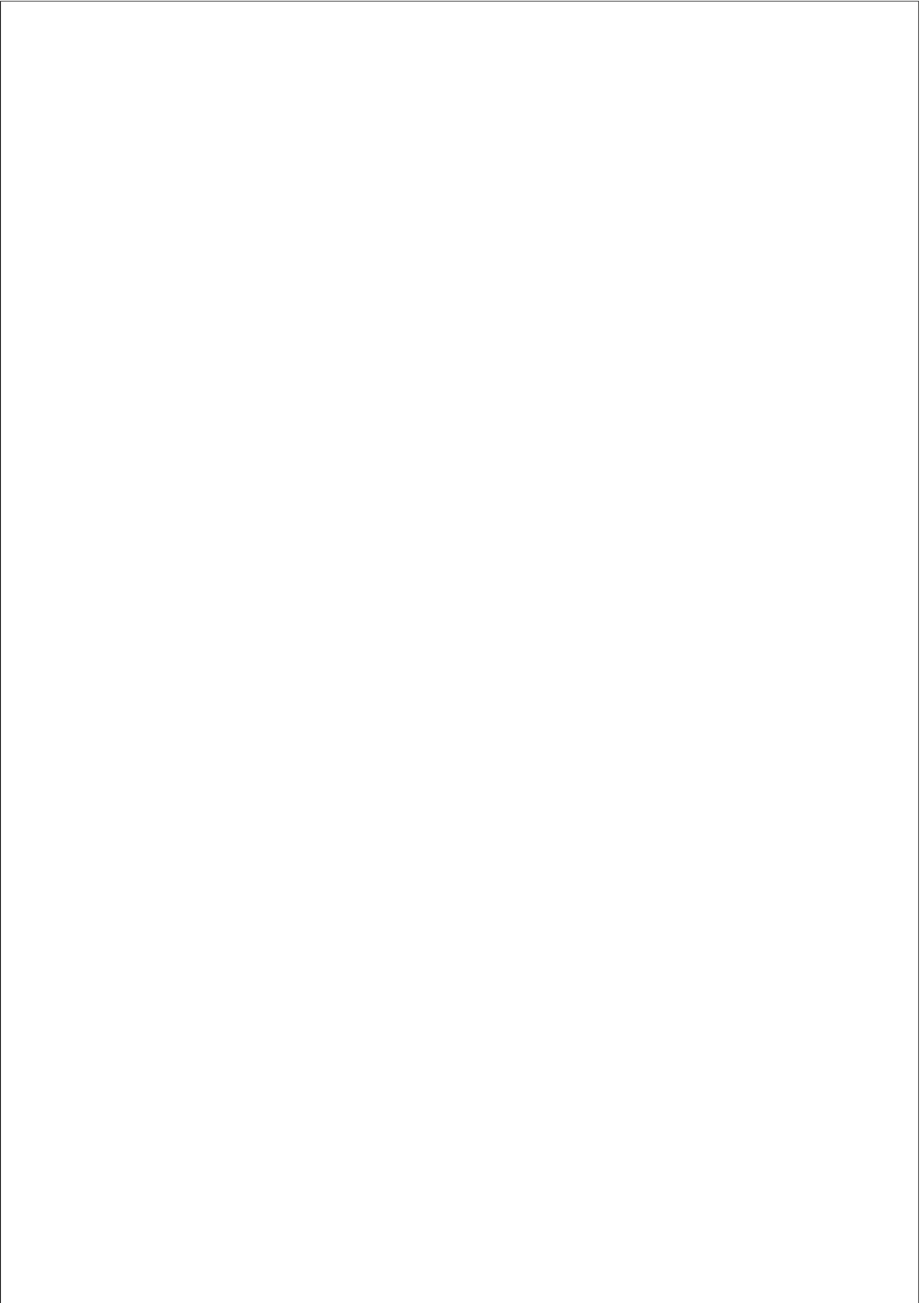
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Abstract

This thesis investigates the two verbal gerunds in English: *POSS-ing* (*Clay's winning the game*) and *ACC-ing* (*Clay winning the game*). It is widely recognized that they do not denote events, but there are many different proposals about their ontological status. This thesis answers two questions: what ontological objects do verbal gerunds denote, and how do *POSS-ing* and *ACC-ing* differ in their meanings? Following the methodology of natural language ontology, I observe the distribution and discourse functions of *POSS-ing* and *ACC-ing* using corpus data. My data reveal two important phenomena. One is the asymmetry between *POSS-ing* and *ACC-ing* as complement of *with* and *without*, which eventually leads to the claim that *POSS-ing* is referential and *ACC-ing* is not. The other is the use of *POSS-ing* after temporal prepositions, which points to *POSS-ing* having a temporal location, leading to the analysis of *POSS-ing* as a Kimian state, an abstract object with temporal properties. *ACC-ing* is analyzed as event kind descriptions.

Resum

Aquesta tesi investiga els dos gerundis verbals de l'anglès: el POSS-*ing* (*Clay's winning the game*) i l'ACC-*ing* (*Clay winning the game*). És àmpliament recongut que no denoten esdeveniments, però hi ha diverses propostes sobre el seu estat ontològic. Aquesta tesi respon dues preguntes: Quins objectes ontològics denoten els gerundis verbals, i com es difereixen els significats del POSS-*ing* i l'ACC-*ing*? Seguint la metodologia de l'ontologia del llenguatge natural, observo la distribució i les funcions discursives del POSS-*ing* i l'ACC-*ing* amb dades del corpus. Les meves dades revelen dos fenòmens importants. El primer és l'asimetria entre el POSS-*ing* i l'ACC-*ing* quan serveixen com a complement de *with* i *without*. Això acaba portant a la afirmació que el POSS-*ing* és referencial i l'ACC-*ing* no ho és. El segon és l'ús del POSS-*ing* que segueix les preposicions temporals. Això indica que el POSS-*ing* està localitzat en el temps, i porta a l'anàlisi del POSS-*ing* com a un estat kimia, un objecte abstracte amb propietats temporals. L'ACC-*ing* s'analitza com a una descripció d'una espècie (*kind*) d'esdeveniments.

Resumen

Esta tesis investiga los dos gerundios verbales del inglés: *POSS-ing* (*Clay's winning the game*) y *ACC-ing* (*Clay winning the game*). Es ampliamente reconocido que no denotan eventos, pero hay diversas propuestas sobre su estatus ontológico. Esta tesis responde a dos preguntas: ¿Qué objetos ontológicos denotan los gerundios verbales? y ¿en qué se diferencian los significados de *POSS-ing* y *ACC-ing*? Siguiendo la metodología de la ontología del lenguaje natural, observo la distribución y las funciones discursivas de *POSS-ing* y *ACC-ing* con datos del corpus. Mis datos revelan dos fenómenos importantes. El primero es la asimetría entre *POSS-ing* y *ACC-ing* cuando sirven como complemento de *with* y *without*. Esto lleva a la afirmación de que *POSS-ing* es referencial y *ACC-ing* no lo es. El segundo es el uso de *POSS-ing* que sigue las preposiciones temporales. Eso indica que *POSS-ing* está localizado en el tiempo y conduce al análisis de *POSS-ing* como un estado kimiano, un objeto abstracto con propiedades temporales. *ACC-ing* se analiza como una descripción de una clase (*kind*) de eventos.

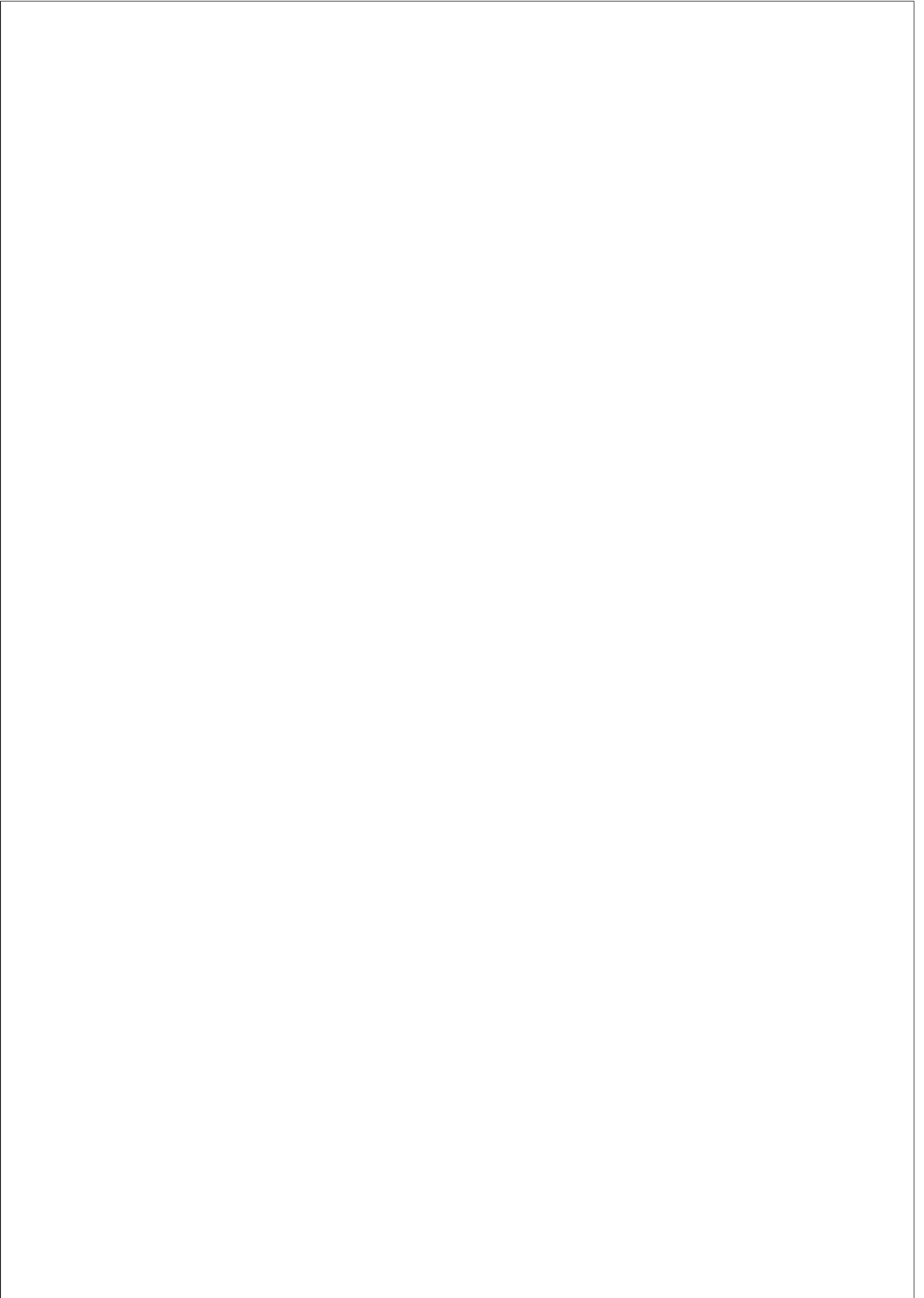
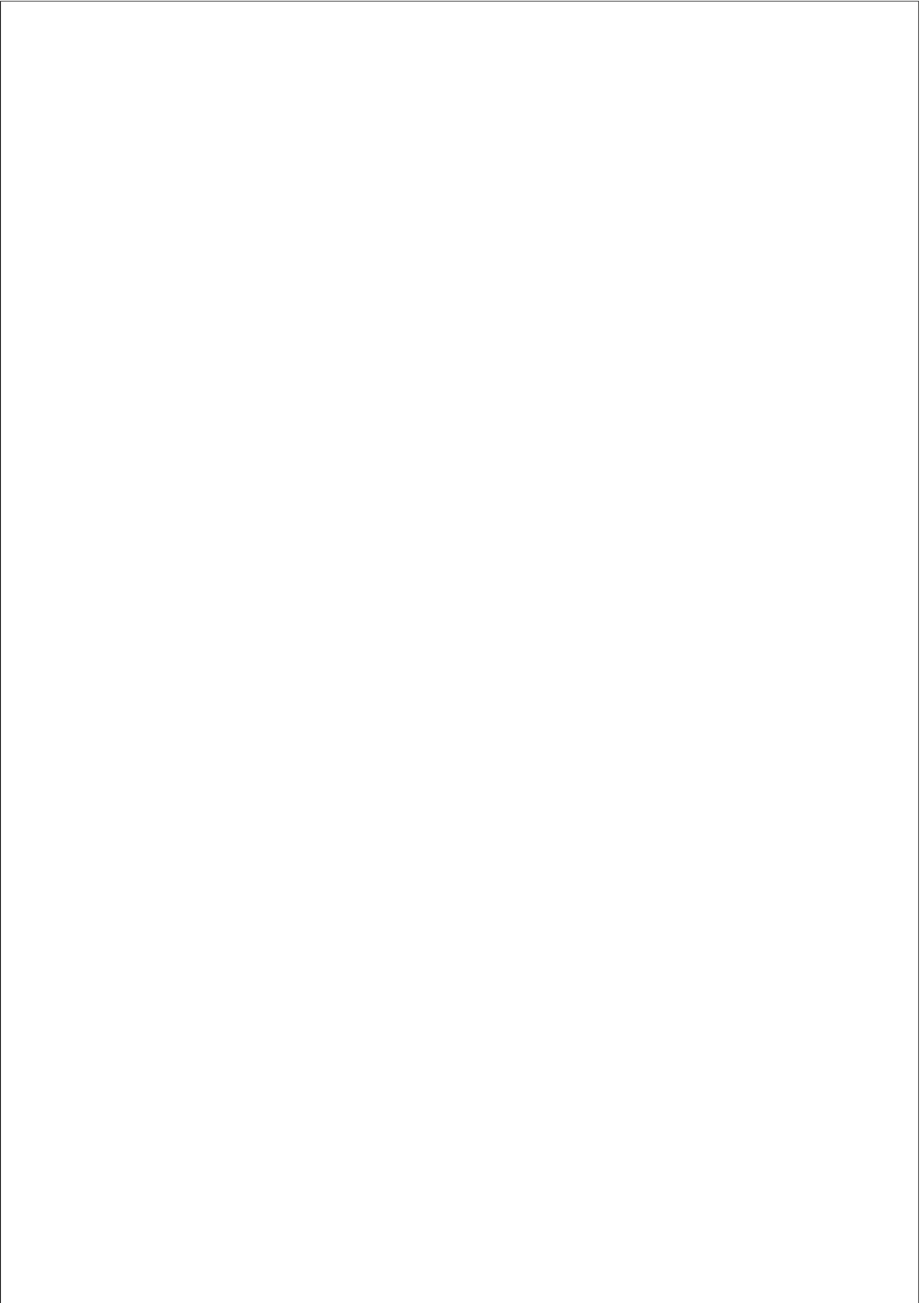


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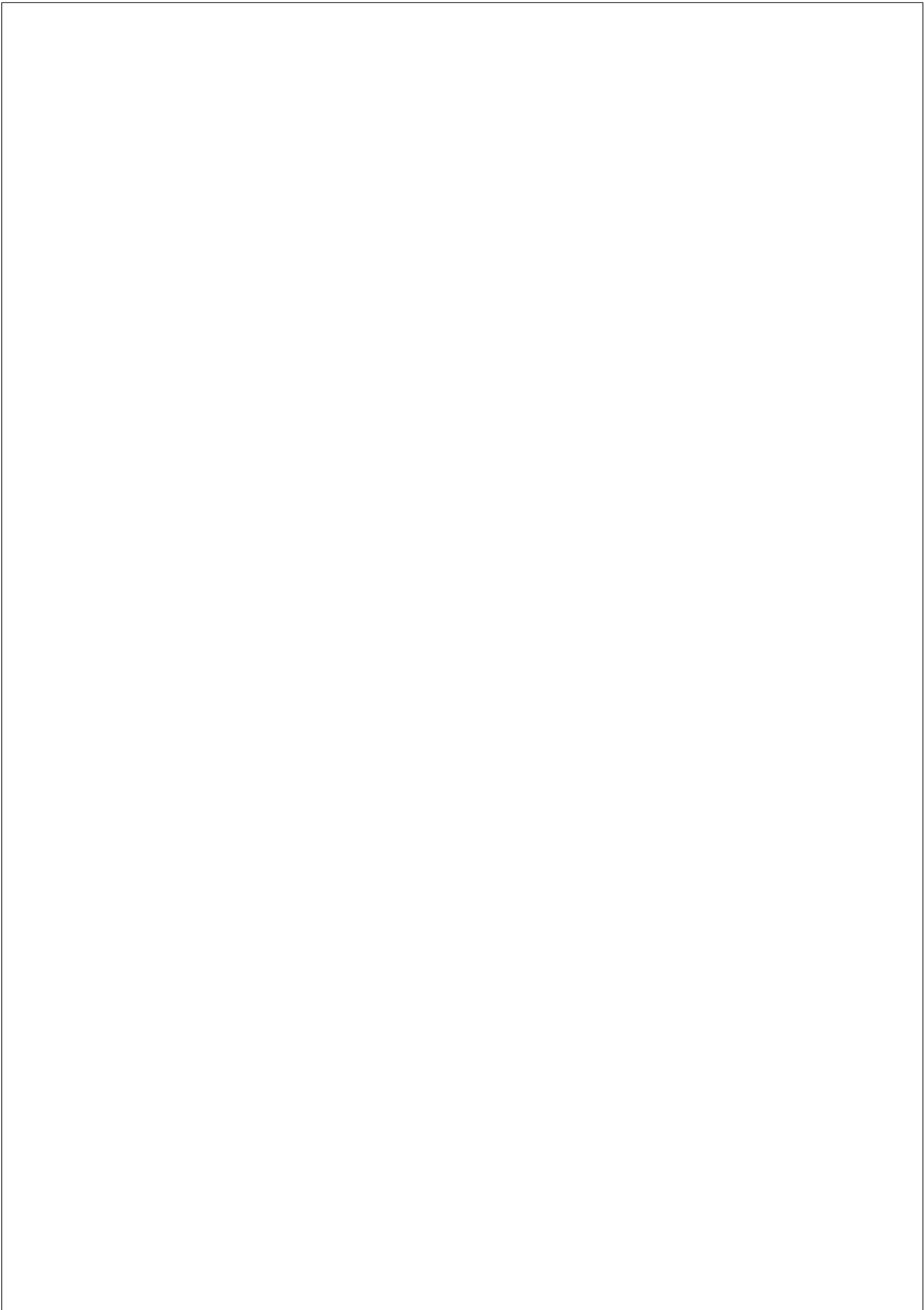
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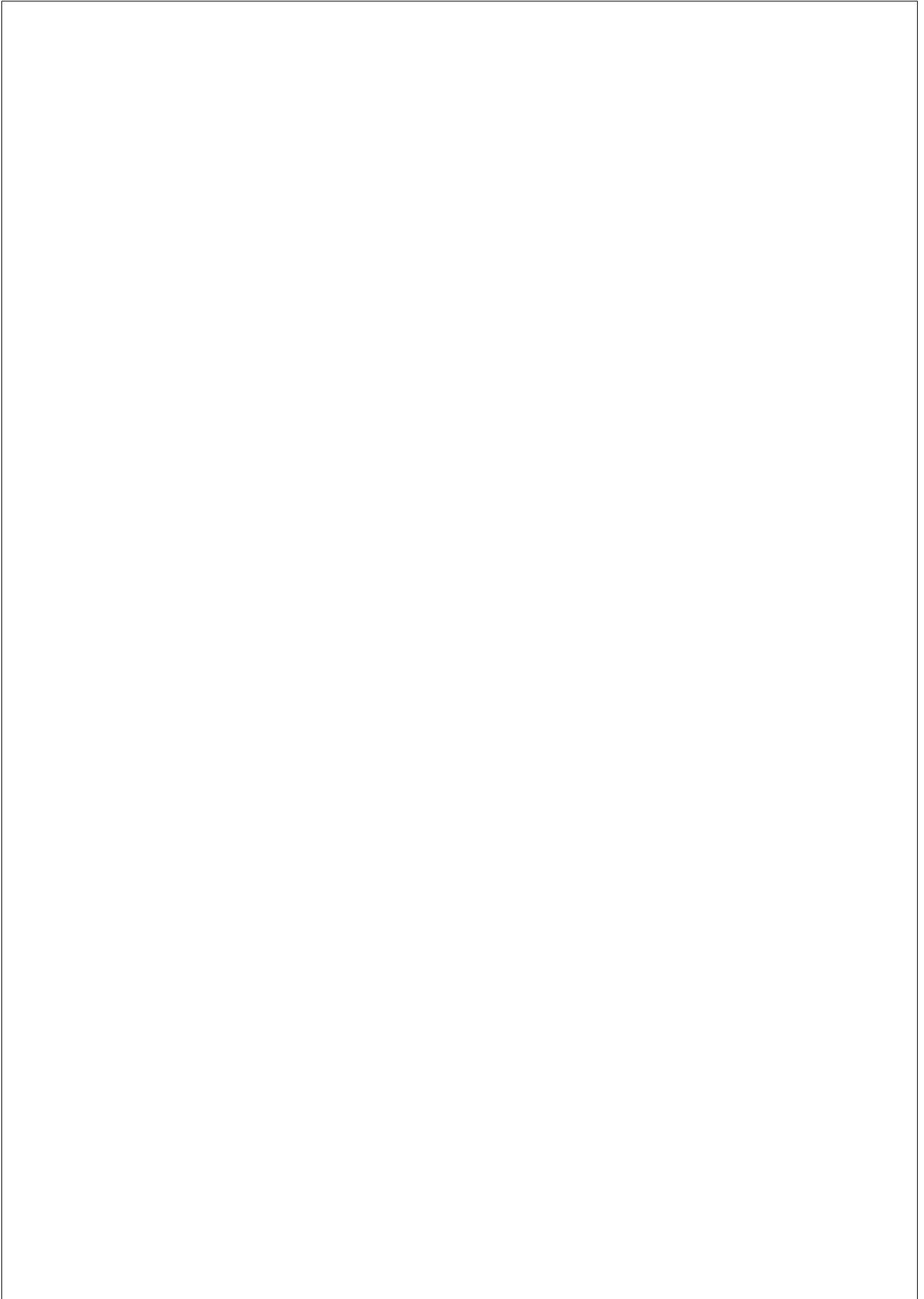
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Chapter 1

INTRODUCTION

Languages provide us with a variety of ways to transmit the same information. Let us assume that I watched a game last Saturday, and the player I supported, whose name was Clay, was on the winning team. I could report Clay’s victory to my friends using a declarative sentence and add a comment about it:

- (1) a. Clay won the game.
- b. That was exciting!

I could also use just one sentence to communicate this idea. The following are some of the options:

- (2) a. That Clay won the game was exciting.
- b. Clay winning the game was exciting.
- c. Clay’s winning the game was exciting.
- d. Clay’s winning of the game was exciting.
- e. Clay’s victory was exciting.

The sentence (2e) stands out by containing the word *victory*, an event noun that is not derived from the verb *win*. The subjects of (2a-d) are all known as “nominals” for they seem to be some nominal version of the original sentence (1a): they all contain the subject *Clay*, the object *the game*, and some form of the verb *win*: either a finite verb in a *that-*

clause (2a) or an *-ing* form (2b-d), and they occupy grammatical positions typically occupied by noun phrases (NPs), such as subject of sentences.

The *-ing* forms in (2b-d) are known as gerunds. A further division is made between (2b-c) and (2d): (2b-c) show verbal properties, such as taking direct complements, taking adverbial and not adjectival modification (3a), and accepting negation (3b) and perfect (3c); (2d) shows nominal properties, so it takes a prepositional phrase (PP) headed by *of* instead of a direct complement, accepts adjectival modification instead of adverbs (4a), and accepts neither negation (4b) nor perfect (4c).

- (3) a. Clay('s) confidently/*confident winning the game
- b. Clay('s) not winning the game
- c. Clay('s) having won the game
- (4) a. Clay's *confidently/confident winning of the game
- b. *Clay's not winning of the game
- c. *Clay's having won of the game

I will refer to (2b) and (2c) as verbal gerunds, and (2d) as the nominal gerund. The last distinction is to be made between (2b) and (2c). The NP preceding the *-ing* form, which corresponds to the subject in (1a), appears in the genitive case in (2c) and in the accusative (or common) case in (2b), as can be seen in its pronoun equivalents:

- (5) a. Clay's/his winning the game
- b. Clay/him winning the game

(5a) is known as *POSS-ing* because the genitive NP appears as a possessor on the surface; (5b) is known as *ACC-ing*.

The process of turning a sentence or a verbal phrase, such as (1a), into a nominal phrase that occupies argument positions, such as the subjects in (2a-d), is known as nominalization. A common type of nominalization involves the morphological process of adding derivational affixes to the verb: *Clay refused the invitation* becomes *Clay's refusal of the invitation*. In (2b-d), which are all gerundive nominalizations, a suffix *-ing* is added to the verb *win* to make the form *winning*. This thesis focuses on

the analysis of POSS-*ing* and ACC-*ing* in the context of nominalization from two aspects: natural language ontology and referentiality.

Ontology concerns the categories and structures that we use to classify things in the world and in our minds. There is little disagreement that (1a) reports an event, but are we still talking about events when we use a nominal? Nominals have been a subject for ongoing ontological proposals since Vendler (1967b), who differentiates between the structures in (2a-c) and (2d-e) by observing their distribution in relation to different predicates. Notably, nominal gerunds and event nouns (2d-e) are compatible with verbs like *happen* and *take place*, which we commonly associate with events (Davidson, 1967) (6a). At the same time, *that*-clauses and verbal gerunds (2a-c) do not go with such verbs (6b).

- (6) a. Clay’s victory/Clay’s winning of the game took place on Saturday night.
- b. *Clay(’s) winning the game/That Clay won the game took place on Saturday night.

Vendler’s explanation is that nominal gerunds and event nouns denote events, while the subjects in (2a-c) denote facts, which in virtue of their ontological properties cannot be said to *happen*.

The distribution of nominals underscores an intuition: we talk about different sorts of things (or aspects of the same things) in different ways. This is what natural language ontology is concerned with: it is the ontology implicit in natural language (Moltmann, 2022), that is, it involves finding evidence from our use of language to support the establishment of categories. Some things *happen*, others do not; some expressions can be *believed*, others cannot. While most researchers agree that event nouns and nominal gerunds denote events, there have been many proposals about what verbal gerunds denote besides facts (Vendler, 1967b): sets of minimal situations (Portner, 1992), states of affairs (Zucchi, 1993), facts or possibilities (Asher, 1993), descriptions of event kinds (Grimm & McNally, 2015), among others.

Most of these proposals are based on Vendler’s introspective data. This raises the question: does actual language use support the ontolog-

ical claims that have been made for verbal gerunds?

In this thesis, I revisit the distributional data that inspired the ontological discussion by examining examples of *POSS-ing* and *ACC-ing* from the British National Corpus (BNC, 2007). The data uncover unexpected properties of *POSS-ing*, which lead to my proposal that *POSS-ing* denotes Kimian states (Maienborn, 2005). *ACC-ing*, on the other hand, shares its surface form with structures that are not considered as nominalizations, which makes it difficult to determine the range of phenomena to be accounted for in one analysis. After limiting my discussion to “typical *ACC-ing*” (which I will define below) for the most part of the thesis, I explore at the end a view that does not treat *ACC-ing* as a nominalization.

Regardless of the specific ontological analyses and despite differences in their syntax, *POSS-ing* and *ACC-ing* are commonly assumed to denote the same sort of ontological objects or even be equivalent in meaning. Focusing on referentiality, this thesis attempts to answer the second question: how do *POSS-ing* and *ACC-ing* differ in their meaning?

From my collection of corpus data, I highlight a striking but minimally discussed asymmetry between the two verbal gerunds: *POSS-ing* commonly appears after *without* but almost never after *with*, while *ACC-ing* appears with both. Two hypotheses are proposed: one is that they have different licensing conditions, and the other is that they differ in their ability to be temporally anchored, which are further explored in a discourse annotation task and in the modeling of *POSS-ing* as a Kimian state. Eventually, I claim that *POSS-ing* is referential and *ACC-ing* is non-referential.

This chapter presents the background and the structure of the thesis. Section 1.1 discusses previous ontological proposals for verbal gerunds with an emphasis on how they account for data like (6a-b). For most of the analysis carried out in this thesis, I apply Grimm and McNally’s (2015) proposal that verbal gerunds are descriptions of event kinds, which I will discuss in detail in Section 1.2. Section 1.3 lays out the structure of the thesis.

1.1. Gerunds in natural language ontology

This section presents the most important existing proposals for the denotation of verbal gerunds. Following the methodology of natural language ontology (see for example Moltmann, 2019a), the sorts of ontological objects to be identified, concrete or abstract, should be proposed on the basis of evidence in the natural language itself. A basic idea is that the ontological status of an expression is reflected by the predicates that select it as an argument: this leads to a simple distinction between two or three types of objects, as proposed by Vendler (1967b) and Peterson (1997). In the latter case, nominals denote either events, facts or propositions.

Such concepts may be treated as basic objects in the semantics, or may be formulated with the primitives of specific frameworks. For example, events and propositions can be defined using situations in situation semantics (Kratzer, 1989), employed by Portner (1992) and Zucchi (1993); Asher (1993) represents an abundance of abstract objects in Discourse Representation Theory (Kamp & Reyle, 1993).

While some of the ontological objects, like events and propositions, are present in almost all the proposals, those designated as the denotation of verbal gerunds vary greatly. A comparison of these concepts is crucial to understanding the role of verbal gerunds among nominals.

1.1.1. Vendler (1967b) & Peterson (1997): events, facts, propositions

Vendler (1967b) and Peterson (1997) represent the most basic kind of analyses of nominals. Their ontological proposals are based on broad sets of linguistic data, with little dependence on external theories.

Vendler (1967b, 1968) is one of the first studies to systematically describe the distribution of nominals and to offer an ontological explanation for it. The description starts from syntactic tests that divide nominals into two groups: perfect nominals, including event nouns and nominal gerunds (2d-e), and imperfect nominals, including *POSS-ing* (2c) and *that*-clauses (2a). *ACC-ing* is not mentioned, though it easily fits into the class of im-

perfect nominals. For Vendler, perfect nominals involve a head noun that demonstrates fully nominal characteristics, suggesting that they are “perfectly” nominalized, while imperfect nominals still contain a verb with its verbal properties.

Vendler then shows that “containers” vary in their ability to hold the two groups of nominals. Containers are defined as sentence roots with a gap intended for a nominal (Vendler, 1968): for example, *___ surprised me* is a container as one can place a nominal in the blank. Vendler distinguishes between two kinds of containers: “narrow containers” only select for perfect nominals, and “loose containers” select for both perfect and imperfect nominals. Tense and sentence structure are not crucial in Vendler’s discussion, so we can simply see containers as verbal or non-verbal predicates that take nominals as an argument. The following table lists the containers mentioned in Vendler (1967b, 1968):¹

	Narrow containers	Loose containers
Verb (nominal as subject)	occur, take place, take up (time), begin, last, end, precede, follow	surprise, astonish, shock, imply, entail, indicate, cause
Verb (nominal as object)	see, watch, feel, hear, observe, follow, notice, imitate	mention, remember, deny, admit, recall, forget, expect, anticipate
Adjective	sloppy, gradual, slow, fast, sudden, prolonged, long, short	possible, useful, certain, (un)likely, necessary, probable, true, certain
Preposition	before, after, since, until	
Noun	event, process, action	fact, result, reason, cause, axiom, idea

Table 1.1: Containers in Vendler (1967b, 1968)

These data make up the basis of Vendler’s and most other analyses, and,

¹The nouns listed here either serve as a predicate (*That Clay won the game was a fact*) or a shell noun (*the fact of Clay’s winning the game*), using the term of Schmid (2000).

despite being introspective judgments of the author, remain mostly unchallenged in the literature.

(In)compatibility with narrow containers indicates an ontological division between perfect and imperfect nominals. According to Vendler (1967b), the former denote events and the latter, facts: events are concrete entities that exist in time but not in space, and facts are abstract entities that are not located in either time or space. Related to this division of being located or not located in time is the fact that many narrow containers need to be interpreted in relation to either the temporal location (*begin, end, before, after*) of their arguments, or their development regarding time (*gradual, slow, fast*).

Vendler’s informal analysis does not paint the full picture of nominals. One could argue against using the term “fact” by showing that imperfect nominals do not necessarily represent factual information: the subject of *Clay winning the game was unlikely* does not need to conform to the actual world. In fact, Vendler mentions events and facts “and their kin” (Vendler, 1967b, p. 144) leaving space for other potential objects. Another thing to mention is *that*-clauses, which are imperfect nominals but distribute differently from verbal gerunds:

- (7) a. That Clay won the game was true.
b. *Clay(’s) winning the game was true.
- (8) a. George believed/thought that Clay won the game.
b. *George believed/thought Clay(’s) winning the game.

In a later article, Vendler (1967a) considers propositions as the denotation of *that*-clauses and objects of belief.

Peterson (1997) refines Vendler’s analysis by adding propositions to the picture and introducing a stricter classification of containers. A container is eventive, factive or propositional depending on the type of complements they take (Peterson, 1997, p. 66), which in turn is determined by the possibility of substituting the complement with a particular clause type while preserving grammaticality. The author proposes three tests that help determine the type of containers (Peterson, 1997, p. 94):

- (9) **PRESUPP:** A predicate is [+PRESUPP] iff a whole sentence of which said predicate is the matrix predicate can be negated or turned into a yes/no question while preserving the semantics of its nominal complement (e.g. truth value).
CLAUSAL: A predicate is [+CLAUSAL] iff it permits full clauses as its subject or object.
INDQUES: A predicate is [+INDQUES] iff the substitution of its nominal complement with a syntactically and semantically closely related indirect (*wh*-)question preserves grammaticality.

Containers are classified according to the tests:

	PRESUPP	CLAUSAL	INDQUES
Factive	+	+	+
Propositional	-	+	-
Eventive	+	-	-

Table 1.2: Classification of containers (Peterson, 1997, p. 95)

For example, according to these tests, *know* is a factive predicate, *think* is a propositional predicate and *delay* is an eventive predicate.

- (10) *know*
 [+PRESUPP] Clay did not know he won. → Clay won.
 [+CLAUSAL] Clay knew that he won.
 [+INDQUES] Clay knew who won.
- (11) *think*
 [-PRESUPP] Clay did not think he won. ⇏ Clay won.
 [+CLAUSAL] Clay thought that he won.
 [-INDQUES] *Clay thought who won.
- (12) *delay*
 [+PRESUPP] Clay did not delay the construction of the base. →
 The construction of the base was planned or carried out.
 [-CLAUSAL] *Clay delayed that the base was constructed.
 [-INDQUES] *Clay delayed how the base was constructed.

PRESUPP is a semantic test which relates the notion of fact to factive predicates (Kiparsky & Kiparsky, 1970), which are predicates that presuppose the truth of their clausal complements. CLAUSAL and INDQUES are syntactic tests.²

The resulting eventive containers are similar to Vendler’s narrow containers, while Vendler’s loose containers are divided between factive and propositional ones. Consequently, the nominals selected by each type of container are said to refer to, respectively, facts, propositions or events in their context. This division does not correspond to their morphological forms: the same deverbal nominalization *Clay’s performance of the song* may refer to a fact, a proposition or an event:

- (13) FACT: Clay’s performance of the song surprised George.
 PROPOSITION: Clay’s performance of the song was unlikely.
 EVENT: Clay’s performance of the song took place at 9.

Finally, it is important to see how the theories account for the incompatibility between verbal gerunds and narrow containers. For Vendler, this is due to selectional restrictions of narrow containers: they do not select for complements that are fact-denoting. For Peterson, interestingly, ACC-*ing* is not mentioned and POSS-*ing* is able to denote events, which he demonstrates with the following example that most researchers on this topic would not agree with:

- (14) Mary’s refusing the offer occurred. (Peterson, 1997, p. 71)

Peterson’s theory is not concerned with predicting compatibilities; instead, if a nominal is to appear with a certain type of containers, it obtains that ontological status in that context. Peterson dedicates a large portion of his work to the conversion between the three types of objects for texts

²It is worth noticing that three binary features theoretically give eight possible combinations, and here it suffices to use PRESUPP and either CLAUSAL or INDQUES to distinguish the three categories. It is also natural to ask whether the other combinations of these features are ruled out, and, if not, what such predicates are like. The author does not provide an answer but admits that there are ambiguous cases and counterexamples (Peterson, 1997, pp. 78–80).

like the following:

- (15) [Clay’s performance of the song]_i eventually took place at 9. It_i totally surprised George because he thought that_i was very unlikely.

Clay’s performance of the song first appears in an eventive context, but is subsequently referred to by the anaphors *it* and *that* in factive and propositional contexts, suggesting that the event-denoting expression is used as a fact and a proposition. Peterson invents formal mechanisms to convert between types. In informal terms, a proposition bears truth values; facts are the things that make their corresponding proposition true; events can also be mapped to propositions so that an event occurs iff its corresponding proposition is true.

1.1.2. Portner (1992) & Zucchi (1993): situation-based ontology

Both Portner (1992) and Zucchi (1993) build their account of nominals upon Kratzer’s (1989) situation semantics. Situations are parts of possible worlds and are seen as primitives in semantic interpretation; worlds are maximal situations.

For Zucchi, events are situations. Perfect nominals denote properties of situations: for instance, the denotation of *performance/performing of the song by the soprano* is the property of being a minimal situation (that is, a situation that does not contain anything irrelevant) in which the soprano performs the song; the definite article *the* helps to refer to the unique smallest situation satisfying the description. Propositions denote sets of possible situations which need not be minimal.

Since unlike *that*-clauses or propositions, *POSS-ing* is not selected by propositional predicates like *think* or *believe*, Zucchi claims that *POSS-ing* does not denote propositions. Neither does he opt for the concept of fact, because when *POSS-ing* appears as the complement of *prevent*, what is described by the *POSS-ing* is not true and therefore is not called a *fact* in natural language:

- (16) a. Jordan prevented Clay’s winning the last round.
→ Clay did not win the last round.
b. *The fact that Clay won the last round was prevented.

As a result, Zucchi introduces a new ontological object, a propositional entity referred to as state of affairs. A proposition is mapped to a state of affairs such that the proposition is true iff its corresponding state of affairs is actual (Zucchi, 1993, pp. 212-213). When interpreting *POSS-ing*, it is first mapped to a tenseless proposition and then to its corresponding state of affairs. Zucchi does not elaborate on the nature of states of affairs other than stating that they cannot have a truth value or be objects of belief.

With the ontological distinction between events and states of affairs, the incompatibility between verbal gerunds and narrow containers is a result of selectional restrictions. It is worth noticing that *ACC-ing* is not included in Zucchi’s account.

Portner (1992) also treats events as situations, while verbal gerunds (including *ACC-ing*) denote propositional entities. Portner notices that gerunds in general can be used in a way either similar to propositions or to events. For example, the bare gerund (without a preceding NP) used as the complement of *deny* (17a) can be paraphrased by a proposition (17b):

- (17) a. Charles denied breaking the law.
b. Charles denied that he broke the law.

What Charles denied is the existence of situations such that he broke the law in them. As the subject in (18), the gerund seems to refer to a set of events or situations involving Charles breaking the law.

- (18) (Charles’s) breaking the law always got him in trouble.

Portner avoids introducing an extra ontological object for gerunds like Zucchi does, while still managing to distinguish the denotation of gerunds from regular events and propositions.

The propositional entities denoted by verbal gerunds are sets of minimal situations. By “minimal”, he means “not concrete”: the difference between the denotation of gerunds and that of perfect nominals lies in the

degree of concreteness. As Portner (1992, pp. 30-31) puts it, “A subset of the individuals, which I will call the CONCRETE INDIVIDUALS, is the domain from which nouns and adjectives take their values and over which determiners can quantify. All ordinary individuals plus some situations are concrete individuals.” The denotation of event nouns and nominal gerunds must be concrete in this sense, for such expressions demonstrate nominal properties and can be quantified over. Concrete situations are “maximally specified” in the sense that “they are not part of any situation which occupies the same spatiotemporal region” (Portner, 1992, p. 33).³

The situations in the denotation of verbal gerunds are “minimal”, meaning that they lack many properties that concrete situations have. Therefore, the fact that gerunds are not compatible with narrow containers is also explained by selectional restrictions of the predicate. A nominal gerund such as *Charles’s hitting of Warren* denotes the maximally specified situation that takes place in the same spatiotemporal region as the situations denoted by its verbal gerund counterparts, but being more specified, the nominal gerund is able to combine with predicates such as *take place*, which select for only concrete situations.

While verbal gerunds denote sets of minimal situations, they are still able to pick out an individual situation or event in certain contexts (Portner, 1992, p. 91). In (19), it is possibly one particular situation, instead of the set of all the possible situations in which Taylor hit Warren, that surprised Ryan.

(19) Taylor’s hitting Warren surprised Ryan.

If the *POSS-ing* actually picks out one particular situation in (19), we should raise the question of why the same interpretation is not available in **Taylor’s hitting Warren took place at 4*, where we can easily infer that

³Portner (1992, p. 33) uses the example of *America’s winning the race* and *America’s narrowly winning the race with a run of good luck* to illustrate that the situation denoted by the former is more abstract than, and therefore is a part of, the situation denoted by the latter, so the latter is more specified than the former. Using deverbal nouns or nominal gerunds, regardless of how many modifiers they have, always leads to maximally specified situations.

one particular situation involving Taylor hitting Warren was produced at a certain time. This question is not addressed by Portner.

The denotation of gerunds is also distinguished from regular propositions. As is mentioned above, the denotation of gerunds includes only minimal situations, while propositions are sets of possible situations which include as a part the minimal situation corresponding to their gerund counterpart. Predicates like *believe* only select for whole worlds, which are maximal situations (Portner, 1992, p. 183), and therefore are not compatible with gerunds.

In summary, both Zucchi and Portner propose a three-way distinction in situation semantics: propositions, as sets of possible situations; events, as minimal (meaning “exclusive”) situations for Zucchi and as concrete situations for Portner; and the denotation of gerunds, which is a state of affairs for Zucchi and a set of minimal (meaning “not concrete”) situations for Portner.

1.1.3. Asher (1993): facts and possibilities

Asher (1993) introduces a rich ontology for abstract entities into Discourse Representation Theory (henceforth DRT; Kamp & Reyle, 1993). This framework uses abstract structures called Discourse Representation Structures (DRSs) to represent the processing of a discourse. DRT is a dynamic framework in which every sentence contributes to updating the DRSs constructed by the previous context.

A DRS consists of a universe of discourse referents and a set of conditions. Discourse referents represent entities in the discourse, such as individuals, events and abstract objects. Referents that are notated at the top of a DRS are available for predication and anaphora resolution in the box below. Predicates contribute conditions, and their argument positions need to be filled by referents.

(20) is a simplified representation of *Justin chased a lioness* ignoring the past tense. There is one referent for Justin and one for the lioness, and an event referent for the chasing event, contributed by the finite verb *chased*.

(20)

u, v, e
Justin(u)
lioness(v)
chase(e, u, v)

Event-denoting nominals also introduce event referents. (21) represents *Justin’s construction of the building*, which looks for a predicate to make a full sentence.

(21) λP

u, v, e
Justin(u)
building(v)
construction(e, u, v)
P(e)

In this framework, DRSs may contain smaller DRSs, known as subDRSs. Asher proposes that there are some abstract object referents that are characterized by subDRSs. *POSS-ing* and *ACC-ing* denote facts or possibilities, which are both represented as subDRSs. The referents of a subDRS are only available in the subDRS, so *POSS-ing* and *ACC-ing* do not introduce event referents to the main DRS. For example, *Alex(’s) defeating Clay* as a possibility is represented by the DRS (22) (Asher, 1993, p. 199):

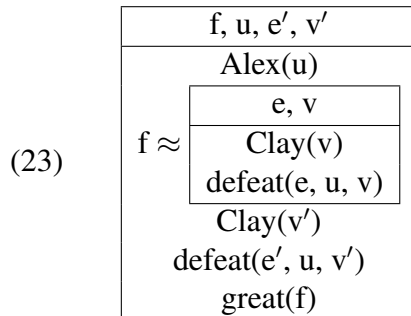
(22) λP

po, u			
Alex(u)			
<table border="1"> <tr> <td>e, v</td> </tr> <tr> <td>Clay(v)</td> </tr> <tr> <td>defeat(e, u, v)</td> </tr> </table>	e, v	Clay(v)	defeat(e, u, v)
e, v			
Clay(v)			
defeat(e, u, v)			
P(po)			

As (22) shows, any predicate that takes *Alex(’s) defeating Clay* as an argument must take the possibility referent as its argument; the defeating event is not available in the main DRS, and this explains the incompatibility with narrow containers.

Depending on the context, the verbal gerund may remain a possibility or denote a fact instead. With predicates like *be likely*, and in contexts like

Jimmy prevented Alex’s defeating Clay, where the defeating event fails to happen in the real world, the gerund remains a possibility. Otherwise, the content of the subDRS is copied to the main DRS, making the possibility a fact, as in *Alex’s defeating Clay was great* (23):



As a result, a defeating event exists in the main DRS. This is what Asher calls a “factive presupposition”: an event referent corresponding to a verbal gerund would normally be added to the main DRS, unless it is blocked by the context. When a gerund denotes a fact, it introduces a fact referent *f* instead of *po*. Note that even in this case, narrow containers are not compatible with verbal gerunds because the only referent available for predication in the same sentence is the fact.

Asher’s ontology is further complemented by other abstract entities like propositions and event types, which I will not explore here. Asher also takes distributional data as an indication of ontological status. He mostly agrees with Vendler but observes that POSS-*ing* is not entirely infelicitous with some prototypical event-like predicates such as *take place* and *happen*:

- (24) a. ?Fred’s shooting Bill took place behind the bar.
 b. ?Fred’s shooting Bill happened yesterday.
 (Asher, 1993, p. 192; the judgments are Asher’s)

Considering the above sentences to be marginally acceptable, Asher is obliged to say that POSS-*ing* also denotes eventualities on some occasions. At the same time, ACC-*ing* is judged to never behave like events.

1.1.4. Grimm & McNally (2015): event kind descriptions

To analyze the gerunds in English, Grimm and McNally (2015) apply a parsimonious ontology consisting only of event kinds (or types; the two words are used interchangeably) and tokens. Their view of event kinds follows Carlson (2003), who extends the concept of kinds from the nominal domain (Carlson, 1977) to the event domain. Just like *apples* are a kind of entities, *eat apples* is a kind of events. Adding descriptive content to an event kind description makes subkinds: the event kind denoted by *eat five apples* is a subkind of *eat apples*, which is again a subkind of *eat*. Event tokens are individual instances of eventualities.

Adapting Zamparelli’s (1995) analysis of the determiner phrase (DP), all *-ing* forms initially denote event kinds. For example, *feeding* denotes the kind FEEDING. Nominal and verbal gerunds then take different paths to becoming either subkind- or token-referring expressions.

Nominal gerunds have the structure of $[_{DP} D [_{NumP} [_{NP} -ing]]]$. NumP stands for number phrase and encodes number specifications. On this level, the *-ing* form shifts to denoting either a set of event tokens that instantiate said kind (25a), or a set of subkinds (25b). \mathbf{R} is the realization relation from Carlson (1977) which relates a token to the kind it instantiates.

- (25) a. $[_{NumP} feeding] = \lambda e[\mathbf{R}(e, FEEDING)]$
 b. $[_{NumP} feeding] = \lambda e_k \forall e \square [\mathbf{R}(e, e_k) \rightarrow \mathbf{R}(e, FEEDING)]$

The participants of the event, specified by genitive NPs or *of*-PPs, are added to the NumP as adjuncts. The NumP then combines with the determiner to become a referring expression. The example below shows how the nominal gerund *the feeding of the lions* refers to either a type (a subtype of FEEDING) or a token (a particular event of feeding the lions):

- (26) a. The feeding of the lions is a tiring and dangerous task.
 b. The feeding of the lions took an hour.

POSS-*ing* and ACC-*ing* are event kind descriptions. (27b) represents the

verbal gerund in (27a). The *-ing* form, originally denoting the kind DEFEATING, becomes a predicate through Chierchia’s (1998) \cup operator. It now becomes a description of event kinds: $\lambda e_k[\cup\text{DEFEATING}(e_k)]$. Participants of the event kind are added as adjuncts through thematic relations such as AG(ENT) and TH(EME) in a Neo-Davidsonian manner (see Parsons, 1990 for details). (27c) is a simplified representation of (27a): the kind description is turned back into an entity through Chierchia’s \cap operator and becomes the agent of an upsetting event.

- (27)
- a. Alex(’s) defeating Clay upset Hannah.
 - b. $\lambda e_k[\cup\text{DEFEATING}(e_k) \wedge \text{AG}(\text{alex}, e_k) \wedge \text{TH}(\text{clay}, e_k)]$
 - c. $\lambda e[\text{UPSET}(e) \wedge \text{TH}(\text{hannah}, e) \wedge \text{AG}(\cap(\lambda e_k[\cup\text{DEFEATING}(e_k) \wedge \text{AG}(\text{alex}, e_k) \wedge \text{TH}(\text{clay}, e_k)]), e)]$

If verbal gerunds appear in certain contexts, such as the subject of a past tense episodic sentence, there is an implication that the sentence involves a particular token event. (27a) implies that there is a token event in which Alex defeated Clay because it is understood that the upsetting event must have been caused by a particular. Grimm and McNally (2015, p. 92) present the existence of a token event as an entailment, but this is merely an implication and is not entailed by the representation (27c). Most importantly, the subject stays a kind-level description.

On this account, nominal gerunds can denote event (sub)kinds or tokens, while verbal gerunds only describe event kinds and may imply an event token. Unlike most of the accounts above, the authors did not address the possible connection between *-ing* nominals and propositions.

The incompatibility between verbal gerunds and narrow containers is explained by pragmatics: narrow containers usually ascribe to an event token some quality that is pragmatically unlikely for an event kind, such as the time of occurrence in (24b). At the same time, nominal gerunds are more suitable for denoting tokens, so even if (24b) is possible, it should be dispreferred. In this respect, event kind descriptions behave differently from some kind-denoting expressions in the nominal domain, such as bare plurals (Carlson, 1977). Assuming one treats bare plurals as always denoting kinds, *Conflicts occurred on July 16* is felicitous and is true as

long as at least one conflict occurred on said date. Loose containers, like *upset Mary*, allow the implication of an event token but do not impose a selectional restriction on their nominal argument. The authors (2015, pp. 95-96) seem to take a vague attitude towards whether there is a clear line between narrow and loose containers, and how exactly they interact with the gerund.

In summary, this section has revealed a wide spectrum of diverse theoretical proposals. A rich ontology, such as that of Asher (1993), takes into account the interpretation of the same gerund in different contexts, while a parsimonious one like that of Grimm and McNally (2015) seeks to explain the phenonema without introducing new objects to the system. Richer ontologies make it easier to explain the incompatibility between verbal gerunds and narrow containers using selectional restrictions, but the newly added ontological objects must be defined clearly; concepts like facts and states of affairs often suffer from the lack of a clear definition. Simpler ontologies face difficulties in explaining the facts about narrow containers, having to resort to subtle distinctions (such as Porter’s minimal and concrete situations) or pragmatics.

1.2. Conceptual background of event kinds

For convenience, most of the analysis of verbal gerunds in this thesis is carried out following Grimm and McNally’s (2015) proposal. This section presents the conceptual background of event kinds, and clarifies a seemingly problematic issue about temporal modification in verbal gerunds.⁴

1.2.1. From kinds to event kinds

The notion of kinds has been crucial in semantic theory since Carlson’s (1977) analysis of bare plurals in English as kinds. Carlson argues that

⁴This section is based on Huang (to appear).

bare plurals name kinds, just like proper nouns name individuals. However, there are at least two different views of what kinds are like. One is based on the instances of a kind, such as Chierchia’s (1998) formal analysis of kinds as individual concepts. For Chierchia, kinds are atomic entities and can be type-shifted to and from properties. A property derived from a kind through type-shifting is the property of being an instantiation of said kind in a given world; a kind derived from a property is the plurality of the extension of that property in a given world. Simply put, kinds are the totality of their instances in each world.

The other view sees kinds as an integral sortal concept (Mueller-Reichau, 2011; Borik & Espinal, 2015) and does not directly map kinds to their instances. In this thesis I am not committed to a specific view.

It is also well-known that kinds express regularity, so not all bare plurals denote kinds. For example, *lions in my backyard* is not a good kind expression because the property of being a lion at a certain location does not intuitively indicate any regular behavior. Such an expression has to denote individual lions, thus being incompatible with predicates that are only fit for kinds (which Carlson calls “kind-level predicates”), such as *be widespread*.

(28) #Lions in my backyard are widespread.

What makes a bare plural unable to denote kinds? Chierchia (1998, p. 350) makes it clear that a property that is necessarily instantiated by only one individual, such as being the denotation of a proper name, does not qualify as a kind. Another restriction, as discussed by Mueller-Reichau (2011), is spatiotemporal localization. Kinds are abstract concepts that cannot be spatiotemporally localized; tokens are localized, but they do not express regularity anymore. The subject in (28) is not a kind because its referent is restricted to what is *in my backyard*.

A similar effect is seen with the definite singular,⁵ another typical kind

⁵I refer to expressions like *the lion*, which have a generic reading in some contexts, as definite singular solely because of their surface non-plural form. They are not considered singular in all analyses. According to Borik and Espinal (2015), the generic reading of expressions like *the lion* is a direct combination of the definite article with a property

expression in English.⁶ When taking certain modifiers, a definite singular cannot go with kind-level predicates:

(29) The (African/*injured) lion is widespread.

It has been proposed that definite singular kind expressions are restricted to what Krifka et al. (1995) call well-established kinds, but it is also observed (Dayal, 2004; Borik & Espinal, 2015) that such a constraint is not a linguistic one, but depends on pragmatic or encyclopaedic information.

When kinds are introduced to the event domain, the requirement for an event kind to express regularity or be “well-established” continues to be important. As I briefly present below, this requirement is crucial in the analyses of various phenomena, including anaphora to manner modifiers (Landman & Morzycki, 2003) and German adjectival passives (Gehrke, 2011, 2013, 2015; Gese, 2011; Maienborn, Gese, & Stolterfoht, 2016).

Landman and Morzycki (2003) report that words like German *so* ‘thus’ are anaphors of manner modifiers, but not spatiotemporal modifiers:

(30) a. Er hat *so* getanzt.
He has thus danced
‘He danced like that.’ (Landman & Morzycki, 2003, p. 1)

of kinds: $\iota x_k[\text{LION}(x_k)]$. Such expressions have unique reference to kinds themselves. They lack a NumP projection where number is specified, and are therefore numberless.

⁶The definite singular is commonly used to express genericity, but it is not analyzed as a kind-denoting expression in all the accounts. For example, Chierchia (1998) proposes that *the lion* has mass denotation: $\text{MASS}(\text{lion})$ comprises the denotation of both the singular *lion* (atomic lions) and the plural *lions* (sets of atoms); the definite determiner then turns the mass into a collective. This makes *the lion* an object, i.e. the totality of lions. The collective reading of *the lion* is normally incompatible with episodic predicates:

(1) ?The lion is roaring in the zoo.

Chierchia explains that this sentence means that the totality of lions is roaring in the zoo, which is normally false, unless it talks about some individuals that are representative of the kind.

- b. *Maria hat am Dienstag getanzt und Jan hat auch *so*
Mary has on Tuesday danced and John has also thus
getanzt.
danced

‘Mary danced on Tuesday, and John danced like that too.’

(Landman & Morzycki, 2003, p. 9)

So can refer to the manner of an event, such as *clumsily*, but not a time. The authors argue that only manner adverbials provide an event kind that serves as the antecedent of *so*. Spatiotemporal modifiers, in contrast, do not represent a regularity and only apply to event tokens.

A similar situation is found with German adjectival passives. Modifiers accepted by this structure are restricted, and spatiotemporal modifiers are notably unacceptable:

- (31) a. Das Haar war schlampig gekämmt.
The hair was sloppily combed
b. *Das Kind war im Badezimmer gekämmt.
The child was in.the bathroom combed

(Gehrke, 2011, pp. 242 & 247)

Most researchers agree that adjectival passives represent the result state type of an event kind. Gehrke (2015) proposes that the event kind employed should be a well-established one. Maienborn et al. (2016) claim that the structure is constrained by pragmatics: the adverbial should informatively affect the result state type. In any case, we see event kinds constrained by similar requirements that prevent *lions in my backyard* from being a kind-referring expression.

Comparing verbal gerunds with these analyses using event kinds, it is striking that verbal gerunds freely take spatiotemporal modifiers:

- (32) Clay(’s) winning the game on the server yesterday was amazing.

In the next subsection, I point out some differences between the prototypical conceptualization of event kinds and the proposal that verbal gerunds

denote event kind descriptions, and then give an analysis for the gerund in (32).

1.2.2. The peculiarity of verbal gerunds

Event kinds have been used to account for different phenomena involving verb phrases (VPs) (Gehrke, 2019). Verbal gerunds, being nominalizations, occupy complement positions of various predicates. We know that verbal gerunds do not go with narrow containers, which ascribe properties of token events (33a). However, a nominal kind can appear felicitously with predicates that do not apply to the whole kind, but only to some (spatiotemporally localized) tokens (which Carlson calls “stage-level predicates”). (33b) gives an existential reading in which some lions came to the house:

- (33) a. *Clay(’s) singing the song started at nine.
b. Lions came to my house at nine.

The theory needs to answer why the verbal gerunds in (33a) do not give the existential reading that one event of Clay’s singing started at nine. Grimm and McNally (2015) use the pragmatic explanation, as we have already seen, that it is impossible that all the tokens that instantiate the kind started at nine. This explanation raises two issues. First, in a given discourse, the kind described by *Clay(’s) singing the song* may have one unique realization. On this view, if it is known that Clay only sang the song once, (33a) does not conflict with the pragmatic assumption and should be acceptable. To resolve this issue, one may argue that the denotation of the gerund is built upon all the potential events of the given kind, regardless of its extension in the given world or context.

Second, why is the predicate *started at nine* unable to force an existential reading of the verbal gerund? Grimm and McNally’s pragmatic explanation is actually in line with Carlson’s (1977) analysis of the kind reading of English definite singulars, where he notices that when paired with an episodic context, definite singulars should help to report something significant about the entire kind (34a), not just any trivial event in-

volving instances of the kind (34b).

- (34) a. The horse came to America with Columbus.
b. ?The horse arrived on my doorstep yesterday.
(Carlson, 1977, p. 278–279)

Although it is impossible that the totality of horses came to America in (34a), one understands that those individuals that did represent the arrival of this kind of animal in the continent. A similar remark is made by Chierchia (1998), though his definite singular is not kind-denoting (see footnote 6). Since definite singulars in English share with verbal gerunds the property of not allowing access to token instantiations (Chierchia, 1998; Dayal, 2004), one could adopt an analysis of definite singulars to account for the incompatibility between verbal gerunds and narrow containers.⁷ I will not seek to pinpoint the ideal analysis in this regard.

Another significant difference between kind expressions and verbal gerunds is that the latter freely takes spatiotemporal modifiers. As I expose in the last subsection, bare plural, definite singular kind terms and most expressions analyzed as event kinds in the literature are object to the requirement of expressing some sort of regularity, and they are notably incompatible with spatiotemporal modifiers.

Token-referring expressions can take temporal modifiers, because tokens are spatiotemporally localized instances of corresponding kinds. A kind expression, in contrast, cannot be localized unless the whole expression turns into a token-referring one. If we assume that the incompatibility with eventive predicates indicates the type-referring status of verbal gerunds, then adding temporal modifiers to them does not turn verbal gerunds into token-referring expressions:

- (35) *Clay(?s) winning the game yesterday happened on the server.

The problem is that *yesterday* can only be used to modify event tokens, but the verbal gerund stays kind-referring. In Huang (to appear), I draw

⁷If one adopts the analysis of Borik and Espinal (2015), definite singulars and verbal gerunds will also share the lack of NumP in their syntactic structure.

inspiration from Gehrke and McNally (2015) and propose the following representation. *Yesterday* combines with an event kind description P and specifies that all its realizations must be located within “yesterday”, which is a temporal interval \mathbf{y} valued indexically with respect to the index i ; τ is the temporal trace function that maps an event token to its time (Krifka, 1989).

- (36) a. $\llbracket \text{yesterday} \rrbracket = \lambda P \lambda e_k [P(e_k) \wedge \forall e, i [\mathbf{R}(e, e_k) \text{ at } i \rightarrow \tau(e) \subseteq \mathbf{y} \text{ at } i]]$
 b. $\llbracket \text{Clay('s) winning the game yesterday} \rrbracket = \lambda e_k [\cup \text{WINNING}(e_k) \wedge \text{AG}(\text{clay}, e_k) \wedge \text{TH}(\iota x \text{GAME}(x), e_k) \wedge \forall e, i [\mathbf{R}(e, e_k) \text{ at } i \rightarrow \tau(e) \subseteq \mathbf{y} \text{ at } i]]$

This type of data can be easily treated in some other ontological proposals for verbal gerunds. For example, in the theories where the denotation of verbal gerunds is based on their corresponding propositions (Vendler, 1967b; Asher, 1993; Portner, 1992), *that Clay won the game yesterday* is not very different from *that Clay won the game*; *yesterday* simply modifies the event token. My analysis shows that temporal modification should not be a problem for the event kind analysis; it may also account for frequency adverbials in verbal gerunds (see Huang, to appear).

Finally, verbal gerunds still differ from most kind expressions in not involving much regularity. Verbal gerunds are commonly used in episodic contexts, where the speaker does not attempt to generalize over possible event tokens at all:

- (37) Clay('s) winning the game yesterday surprised me.

In fact, verbal gerunds contain more specific information than most event kinds in the literature to begin with: they specify at least one participant through the genitive or accusative NP. In some sense, kinds are used as a tool to organize descriptive content. The interpretation of gerunds can probably be remodeled using situation semantics or DRT, but using event kinds expands the scope of what event kinds can do.

1.3. Structure of the thesis

Most of the analyses reviewed in Section 1.1, except for Grimm and McNally (2015), are built on the introspective data presented in Vendler (1967b, 1968), and more attention is given to gerunds in argument positions in the hope of capturing their interaction with containers. This thesis intends to avoid the disadvantage of introspective data by studying the use of *POSS-ing* and *ACC-ing* in Present Day English based on data collected from BNC.

Chapter 2 describes the data collection and reports preliminary observations about the verbal gerunds' compatibility with different predicates. Over 1400 instances of *POSS-ing* were collected from the whole BNC corpus and its distribution is compared with Vendler's data, with narrow containers classified according to their lexical semantics. The distribution is mostly consistent with Vendler's data, except for some temporal expressions which are best accounted for if *POSS-ing* has temporal properties:

- (38) I don't know whether Dersingham knew him prior to his appointing him. (BNC)

It is also noticed that *ACC-ing* has been avoided in many ontological studies. In fact, it is in itself a challenge to determine the range of phenomena to be subsumed under the notion of *ACC-ing* and to collect relevant data. Five structures similar to *ACC-ing* on the surface were found in the process of data collection: the first three are complements of specific groups of verbs, and the later two are known as absolutes (Stump, 1981).

- (39) a. Katy saw Ryan playing the game.
b. Katy had Ryan running around.
c. Katy found Ryan playing the game.
d. Ryan playing the game, Katy returned to her room.
e. With Ryan playing the game, Katy returned to her room.

Assuming that *ACC-ing* as a nominalization where the NP and the *-ing* form make one constituent, and that it shares the distribution with *POSS-*

ing, I apply some diagnostics to separate “typical ACC-*ing*” from the five structures above and collect a sample of over 400 instances of ACC-*ing*. I also point out that even when limited to a small subset of similar constructions, ACC-*ing* is still not a homogenous category.

As ACC-*ing* has been mostly ignored or considered equivalent to POSS-*ing*, this thesis focuses especially on their differences in meaning and use. Chapter 3 highlights an asymmetry between the two verbal gerunds: POSS-*ing* commonly appears after *without* but is often infelicitous after *with*; ACC-*ing* appears felicitously after both.

- (40) a. Clay won the game #with/without George’s helping him.
b. Clay won the game with/without George helping him.

I identify two uses of the *with(out)*-PP: as a VP modifier (41a), which I propose that forms a new event kind with the modified VP; and as a sentential modifier (41b), which contributes to different discourse relations between the main clause and the *with(out)*-PP.

- (41) a. It is seldom that a week passes by without my having several letters on the same theme. (BNC)
b. Without his realising it, Alec’s voice had become as enthusiastic as his uncle’s. (BNC)

The incompatibility between *with* and POSS-*ing* may be explained from two perspectives. From the pragmatic aspect, I propose that POSS-*ing* and ACC-*ing* have different licensing conditions, making POSS-*ing* infelicitous when a corresponding ACC-*ing* is felicitous. From the semantic aspect, I suggest that the two verbal gerunds differ in their ability to be temporally anchored. These two explanations are further developed in Chapters 4 and 5.

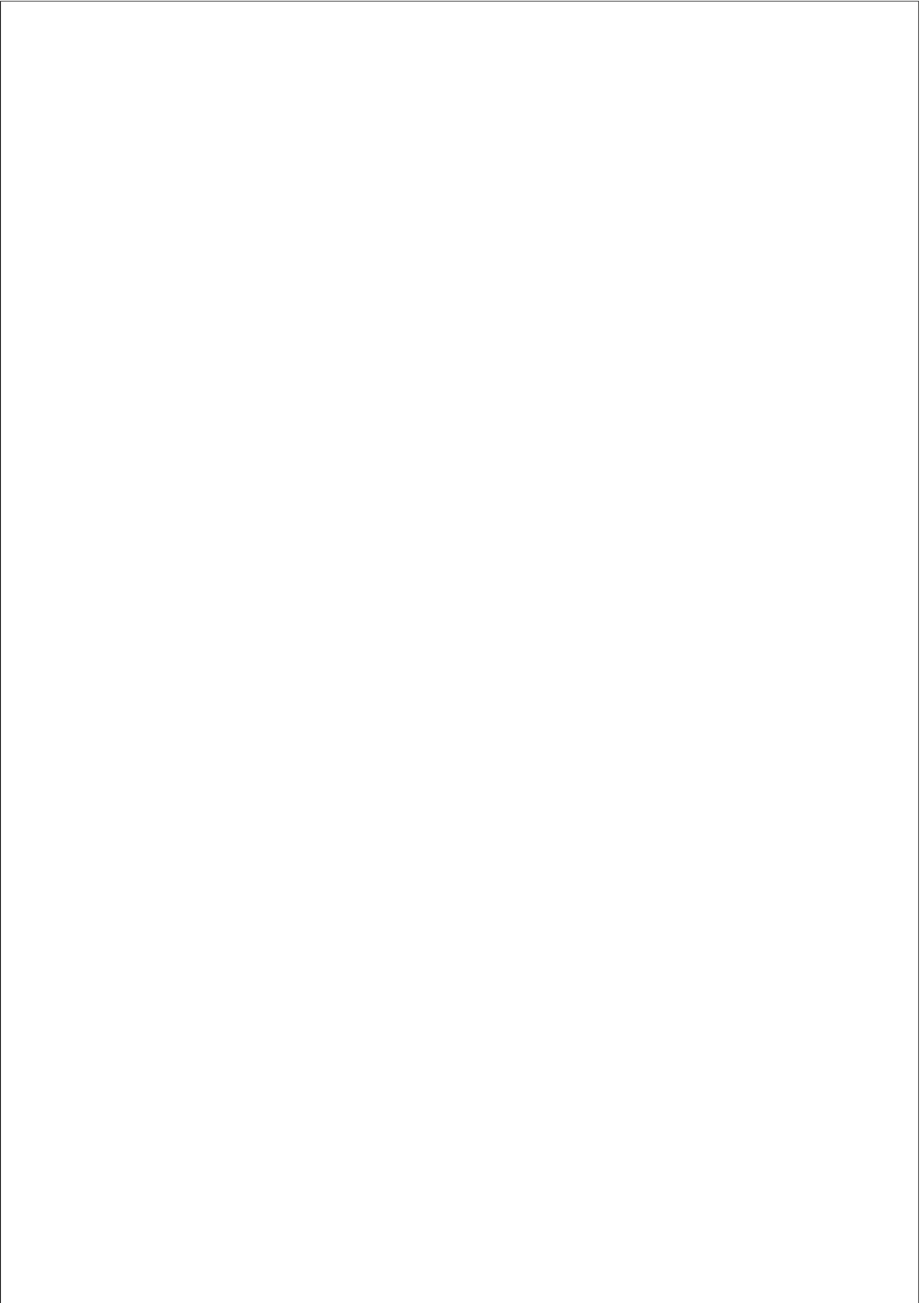
Chapter 4 develops on the idea that POSS-*ing* and ACC-*ing* differ in their licensing conditions. I review Grimm and McNally (2015) and Portner (1992) for their predictions about how POSS-*ing* and ACC-*ing* differ in their context, and formulate two hypotheses to be examined in a discourse annotation task on a sample of 200 instances each of POSS-*ing*

and *ACC-ing*. Grimm and McNally (2015) treat *POSS-ing* as a possessive structure and claim that *POSS-ing* prefers contexts where a corresponding event token is implied. Portner (1992) sees *POSS-ing* as definite and *ACC-ing* as indefinite, so *POSS-ing* has to meet the familiarity requirement on definite expressions. This is measured by givenness in the context.

The discourse annotation task faces the challenge of tracking rich descriptive content and referential information contained by the verbal gerunds. I apply an annotation scheme based on Baumann and Riester (2012). The results confirm that *POSS-ing* tends to appear in contexts with token inference and *ACC-ing* does not, but both verbal gerunds are similarly distributed in terms of discourse givenness. *POSS-ing* is able to introduce new information, and notably, *ACC-ing* also appears commonly as give information, making it less likely an indefinite expression.

Chapter 5 focuses on temporal properties of *POSS-ing*, especially in a few corpus examples where it appears after temporal prepositions. I propose that *POSS-ing* should be modeled as a Kimian state (Maienborn, 2005): an abstract ontological object that is similar to a fact, but with temporal properties. Specifically, *POSS-ing* inherents its temporal information from an implicit event token. A *POSS-ing* expression’s time starts when the implicit event token is completed, and extends infinitely to the future.

Finally, Chapter 6 is a preliminary analysis of *ACC-ing* as a non-referential expression. Although the use of temporal preposition + *ACC-ing* is not attested in my data collection and is generally thought to be obsolete, examples can be found in corpus searches and are accepted by some native speakers. I propose that they should be treated on a par with augmented absolutes, and *ACC-ing* is non-referential on this use. Based on existing syntactic analyses of *ACC-ing*, I explore the possibility of not treating *ACC-ing* as a nominalization at all. This makes it unnecessary to distinguish *ACC-ing* from similar structures in (39): they may all be analyzed as non-referential phrases that only contribute descriptive content. I represent *ACC-ing* as a non-referential expression in DRT, using thematic arguments from Farkas and de Swart (2003).



Chapter 2

DATA COLLECTION AND OBSERVATIONS

The distribution of verbal gerunds described by Vendler (1967b) makes up the foundation of any ontological proposal for English nominalizations and remains mostly unchallenged, except by Peterson (1997) who accepts the use of eventive predicates with *POSS-ing* and Asher (1993) who partially accepts it. However, the introspective data used by Vendler and many other researchers are not necessarily representative of how verbal gerunds are used in English. As Grimm and McNally (2015) noticed, while most of the data discussed in the literature involve gerunds in argument positions, their collection of data based on 40 verbs from the Brown Corpus (Francis & Kucera, 1979) showed that 85% of all the *-ing* gerunds and over 60% of *ACC-ing* instances occurred out of argument positions. It can also be noticed from their data that both verbal gerunds are rare configurations: *ACC-ing* and *POSS-ing* represented respectively 6.5% and 1.5% of their data. For the purpose of describing their distribution, it is necessary to create a larger, specialized collection for *POSS-ing* and *ACC-ing*.

The use of corpora is a common practice in the study of English gerunds, especially in regard to the development of the syntactic structure (Tajima 1985, Fanego 2004, Fonteyn and Maekelberghe 2018, Fonteyn

2019). In recent years, many studies about uses and meanings of gerunds carried out in functionalist frameworks are also based on corpus data (Fonteyn, De Smet, and Heyvaert 2015, Fonteyn 2016, Maekelberghe 2018). Most of them look at all kinds of gerund constructions with an emphasis on the general distinction between nominal and verbal gerunds, the latter consisting of a majority of bare gerunds, which hardly represent *POSS-ing* and *ACC-ing* at all. Heyvaert, Rogiers, and Vermeylen (2005) is the only paper addressing specifically the difference between *POSS-ing* and *ACC-ing*, based on 911 instances of *ACC-ing* and 139 of *POSS-ing* collected from the UKspoken corpus of COBUILD and the Times corpus. They found that *POSS-ing* was relatively more common in the formal register whereas *ACC-ing* predominated in both formal and informal registers. They also observed a few contrasts among predicates selecting *POSS-ing*, but the size of their corpus, especially of *POSS-ing* data, was still very limited for a thorough description of gerund distribution.

The current thesis draws on corpus data to (dis)confirm the generalizations made from introspective data and to find new linguistic phenomena to be accounted for. Moreover, a collection of data facilitates quantitative comparison and later qualitative analysis of gerund uses. In this chapter, I report the collection of *POSS-ing* and *ACC-ing* data from the British National Corpus (version 3 (BNC XML Edition), 2007), a corpus in British English consisting of 100 million words of text from a wide range of genres, originally created by Oxford University Press in the 1980s to early 1990s. My collection represents the largest corpus of these two structures so far, notably containing almost all the *POSS-ing* instances from the whole BNC. While *POSS-ing* is a well-defined construction and is relatively easy to collect, *ACC-ing* shares the surface form with various structures and turns out to be conceived differently across theories, which makes its identification and collection especially difficult. After describing the data collection process, I examine Vendler’s generalizations against my data and make preliminary remarks on the linguistic contexts of the two gerunds.

2.1. Collection of POSS-ing data

The POSS-*ing* collection is based on a copy of the BNC, previously parsed with part-of-speech tags and dependency relations using MALT-Parser.¹ The target structure known as POSS-*ing* is characterized by a possessive form followed by an *-ing* form that, if its argument structure permits, is able to take a direct complement. Structures like (1a) (given that *'s* is a possessive marker) are unambiguously POSS-*ing*. If the *-ing* form does not take a complement (1b), it cannot be easily distinguished from a nominal gerund or a derived noun ending in *-ing*, resulting in large amount of disambiguation work. Therefore, *-ing* forms without a complement are excluded from my collection. However, if the *-ing* form is a perfect auxiliary (1c), it is again unambiguously POSS-*ing* even without a complement.

- (1) a. Alex’s building the palace
 b. Alex’s building
 c. Alex’s having eaten

First, I used a python script² to find phrases in the form of (1a):

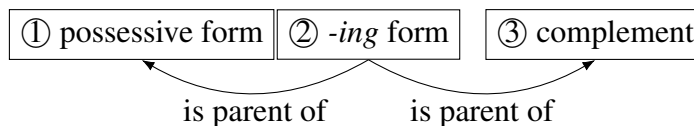


Figure 2.1: Pattern to find POSS-*ing* in form of (1a)

The script first finds an *-ing* form ② by looking for all the words ending in *-ing*, then checks whether there is a possessor and a direct object among its children. The possessor ① includes all the possessive pronouns: *my*, *your*, *his*, *our*, *their* and *its*, excluding *her* due to its being formally identical to accusative. It also includes the particle *'s* or *'* tagged as a possessive

¹<http://www.maltparser.org/>

²Based on a script written by Gemma Boleda for an earlier study using the same corpus.

marker. The target phrase must contain a node ③ parsed as the object of ②.³ For every target phrase found, I extracted the sentence containing the phrase and a context before it no larger than 250 words consisting of full sentences. A total of 1262 lines of data were collected at this stage.

The data were then manually cleaned and annotated for the predicate selecting POSS-*ing*. Many lines collected by mistake due to inaccuracies in the parsing (for example, the contraction of *is* tagged as possessive 's) were removed. I also removed cases with plural possessors ending in *s*, because their genitive form with a silent ' is phonetically identical to the accusative form, risking potential error in the writing or transcription. Other cases that were deleted mainly involved ambiguity between gerunds and result nominals (for example, *our finding that...* is ambiguous between a POSS-*ing* and an NP referring to a particular finding) and cases with an intransitive -*ing* verb incorrectly parsed as taking an object. The fully cleaned data contained 738 lines.

Considering that the possessive 's could also be wrongly tagged as *is*, I searched for a second pattern shown in Figure 2.2 specifying the form of 's instead of the possessive tag, and collected the word that immediately precedes 's as the possessor.⁴ After cleaning the data with the same criteria as described above, 79 lines were added.

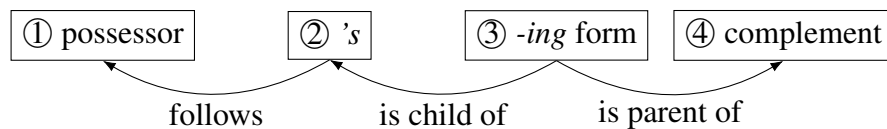


Figure 2.2: Extra pattern to find POSS-*ing* in form of (1a)

The two patterns above did not find perfect forms like (1c). Also, when the -*ing* form is *being*, its complement is usually not parsed as its object

³③ is a child of ② and the function of ③ is OBJ.

⁴This query essentially looks for progressives that has a direct complement. In this query, I excluded cases in which the preceding word was *it*, *there*, *what*, *that*, *who*, *he* or *she*. *It*, *who*, *he* and *she* have a genitive form, so the 's following them is unambiguously *be*. I later ran a separate query on *there*, *what* and *that* where I did not specify the relation between 's and the -*ing* form, and no relevant data were found.

and therefore escapes the first pattern, so a third search was performed with the following two patterns. In Figure 2.3, *having* has among its children a past participle that follows it and a possessive form that precedes it. In Figure 2.4, *being* has a child whose function is parsed as verbal complement or predicate, and another child that is a possessor.

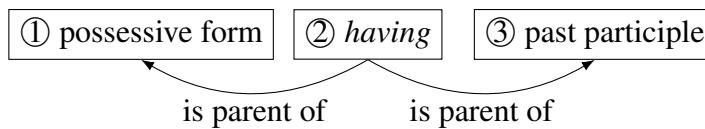


Figure 2.3: Pattern to find POSS-*ing* in form of (1c)

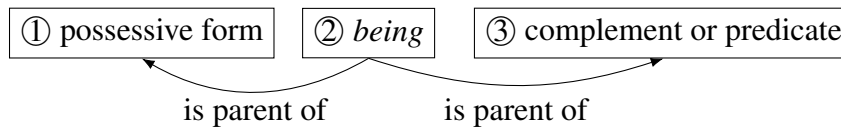


Figure 2.4: Pattern to find POSS-*ing* with *being*

This search added 100 lines of *having* and 493 lines of *being* that I manually checked to be qualified data.

A few lines of data were found to be unqualified and deleted at later stages. The resulting collection of data, which I will refer to as “my data collection”, contains 1408 tokens of POSS-*ing* from the whole BNC. While carrying out unrelated tasks, I found more POSS-*ing* tokens that were not covered by any of the patterns described above. They were not added to the collection but will be taken into account in the analysis. My data collection is not intended to be an exhaustive collection of POSS-*ing* in BNC, but it should be a representative sample of POSS-*ing* in British English in terms of size and variety.

2.2. Preliminary observations of POSS-ing data

The POSS-ing collection makes it possible to examine in a new light the introspective data from the literature. Like Heyvaert et al. (2005) and Grimm and McNally (2015), my data collection confirms that the most common syntactic positions of POSS-ing are not argument positions:

Function	Raw frequency	Percentage
Nominative subject	52	3.69
Accusative object	141	10.01
Following noun and <i>of</i>	371	26.35
Following other prep.	818	58.10
Other	26	1.85
Total	1408	100.00

Table 2.1: Distribution of POSS-ing by syntactic context

In this section, I take a first look at the data by checking if POSS-ing actually co-occurs with narrow containers. The following narrow containers mentioned in Vendler (1967b, 1968) and Horn (1975) can be grouped into basic types according to their syntactic categories and lexical semantics:

- (2) **Eventive verbs:** occur, happen, take place
Perception verbs: see, watch, feel, hear, observe, notice
Manner adjectives: sloppy, gradual, slow, fast, sudden, prolonged, long, short
Event-describing shell nouns: event, process, action
Temporal prepositions: before, after, since, until
Temporal verbs: take up (time), begin, last, end, precede, follow
Miscellaneous: imitate (Vendler, 1968), cherish, avoid, enjoy, de-test (Horn, 1975)

Eventive predicates are used to assert the existence of events in English⁵

⁵The verb *exist* is restricted to certain objects in English and does not apply to events (Moltmann, 2019a).

and locate them spatiotemporally, and they should not be applied to abstract objects without spatiotemporal location. Most researchers find them incompatible with verbal gerunds and take it as the main evidence that verbal gerunds do not denote events. Two exceptions are Asher (1993) and Peterson (1997): while the latter consistently accepts POSS-*ing* with eventive predicates, the former does not find them perfectly acceptable, but notices that *take place* and *happen* are more felicitous with POSS-*ing* than with ACC-*ing*:

- (3) a. ?Fred’s shooting Bill took place behind the bar.
- b. ?Fred’s shooting Bill happened yesterday. (Asher, 1993, p. 192)

In my collection, POSS-*ing* is not found to appear with eventive predicates.⁶

Compatibility with perception verbs reflects an ontological property of events, namely that they are perceptible (Maienborn, 2011). The perception verbs mentioned by Vendler are not found taking POSS-*ing* as complement in my collection except for one case with *notice*:

- (4) Myra laughed. “Wait till the show – you’ve just described the dress Claudia has designed and that Dana will wear.” Claudia stole a look at him; he didn’t appear to have noticed *Myra’s saying Dana’s name*. (BNC)

One can argue that *notice* does not require direct perception of events and need not be taken as counterexample. Although both Huddleston (2002) and Levin (1993) consider *notice* a perception verb for its behavior in syntactic alternations, it is found to be atypical in several aspects (see for

⁶I have seen one case in the BNC where POSS-*ing* allegedly appears with *take place*:

- (1) [Regarding the Bible verse “Have you not known? Have you not heard?”]
What is not specified in line A is when *Israel’s coming to know and hearing* is supposed to have taken place. (BNC)

Since *come* is an intransitive verb, it is not clear that *Israel’s coming to know* (as opposed to *Israel’s knowing God*) is POSS-*ing* and therefore it is not included in my collection. Its ACC-*ing* counterpart is judged as unacceptable by my informants.

example Gisborne, 2010, pp. 8–12). Note that it is acceptable to say *He noticed (the fact) that Myra said Dana’s name*.

Manner adjectives reflect the ability of events to be realized in different ways (Maienborn, 2011). Internally, *POSS-ing* is like a VP and takes manner adverbials freely, but the adjectival predication of the same manners is not possible:

- (5) a. Clay’s patiently/attentively/slowly digging the hole
- b. *Clay’s digging the hole was patient/attentive/slow.

Some manner adjectives, such as *patient* or *attentive*, imply the existence of an agent and cannot be predicated of events without an agent; others, like *slow*, only describe the way an event develops and are more suitable in testing for events. Most of the adjectives mentioned by Vendler (1967b) describe the progression of a process in relation to time, and the incompatibility with such adjectives shows that verbal gerunds do not refer to a dynamic process with a finite time span. Indeed, my data collection does not contain any case of *POSS-ing* accepting adjectival predication of this kind. The following example, found in the BNC while carrying out a different task, seems to show that manner adverbials are still accessible outside the *POSS-ing*:

- (6) I am [...] listening to a British Rail Tannoy announcement, delivered as dispassionately and routinely as *an abattoir attendant’s delivering a bolt through the skull of yet another helpless, terrified, steer* [...] (BNC)

It is important to note that lack of positive evidence in my collection does not verify Vendler’s claim that *POSS-ing* does not appear with such predicates or deny Peterson’s (1997) intuition that it does. *POSS-ing* rarely acts as a subject, so it only suggests that such a combination, if possible at all, is rare, and that we do not have enough evidence to support the idea that *POSS-ing* has a similar distribution to other event-denoting expressions.

In the following subsections, I discuss those types of narrow contain-

ers that do combine with POSS-*ing* in my collection.

2.2.1. Shell nouns

Vendler (1968) lists the nouns *event*, *process* and *action* as narrow containers, in contrast to loose containers such as *fact*, *result*, *reason* and *idea*. These containers have two functions: in nominal predication and as shell nouns taking an *of*-PP. In nominal predication, for example, one is not expected to say a verbal gerund *is an event*. My data collection does not contain any instance of narrow containers in nominal predication. Loose containers such as *cause* and *reason* do appear in nominal predication:

- (7) a. [...] in the past *our treating permanent substitute families as if they were temporary* has been a cause of insecurity. (BNC)
b. [...] *its being required by the authority* is an additional reason for its performance. (BNC)

Shell nouns, using the term from Schmid (2000), are abstract nouns that characterize propositional content encoded in the linguistic context. Shell noun + *of*-PP is a typical pattern in the use of shell nouns.⁷ The content of the complement is characterized by the noun: as Vendler points out, *the event of* should not be followed by a verbal gerund. Interestingly, the use of *event* as a shell noun for POSS-*ing* and ACC-*ing* and as a general term for eventualities occurs throughout Peterson’s (1997) writing, which allegedly reflects his ontological picture:

- (8) a. Such an event is thought of as the event of some concrete event *e* having a property at some time. (Peterson, 1997, p. 182)
b. But the event of Smith’s death is not the same thing as the event of Jones’ killing Smith. (Peterson, 1997, p. 222)

The most frequent 10 shell nouns taking POSS-*ing* as a postmodifier in

⁷The *of*-PP may also have a genitive reading, but it is irrelevant to the shell noun reading.

my collection are the following:⁸

Shell noun	Raw frequency	Shell noun	Raw frequency
chance	29	result	13
possibility	24	fact	10
event	20	probability	10
question	15	consequence	10
likelihood	13	prospect	7

Table 2.2: Ten most frequent shell nouns combining with POSS-*ing*

Before discussing particular shell nouns, I have to point out that NP + *of*-PP is not necessarily a shell noun structure, because apart from the characterization relation that we find in shell nouns, the *of*-PP may also represent a possessive relation. It is usually easy to distinguish between a shell noun and a possessee. For example, the *of* in *as a result of* represents a possessive relation because *result* is a relational noun, and what follows *of* is by default the cause; the *fact* in *the fact of Clay’s winning the game* is a shell noun because *fact* is not a relational noun and cannot be owned, we can say *Clay’s winning the game is a fact* but not **has/produces a fact*. However, many nouns are ambiguous between shell nouns and possesseees. *The possibility of Clay’s winning the game* either characterizes *Clay’s winning the game* as a possibility (something that is possible), or refers to the probability of a possible situation, as we can say *The possibility of Clay’s winning the game is high/low*, but not **Clay’s winning the game is high/low*.

Narrow containers do appear in the shell noun + *of*-PP pattern in my collection. 19 cases are selected by the phrase *in the event of*:

- (9) a. In the event of *your being ineligible*, [...] you may still be entitled to receive income support [...]. (BNC)

⁸The list of shell nouns was obtained by setting the word selecting POSS-*ing* as *of*. As I comment below, this does not guarantee that the noun is used as a shell noun. The counts for the noun forms include both singular and plural forms.

- b. Today, in the extremely unlikely event of *its ever being put up for sale*, it would certainly fetch several million US dollars on the open market. (BNC)
- c. In the event of *our asking you to input other sets of data for subsequent disks* we will pay you 250 per disk on delivery. (BNC)

In the event of phrases do not make a counterexample to Vendler’s claim. First, in none of the instances the POSS-*ing* after *in the event of* refers to an actual event. Rather, this phrase introduces a hypothetical situation which serves as the antecedent for a conditional with the matrix clause as the consequent, similar to *if* or *in case*. The matrix clause, usually containing a modal, is not evaluated *in* or as part of a spatiotemporally bound event token, but rather in a possible situation or world. In this sense, *in the event of* can be seen as a fixed phrase where *event* does not carry its literal meaning. Second, the POSS-*ing* in this phrase may describe states (*your being ineligible*), but it is infelicitous to characterize a state as an event outside the structure (*the state/*event of being ineligible*). Third, the word *event* in this structure cannot be modified by those manner adjectives claimed to be narrow containers, and therefore does not denote a concrete event:

- (10) *In the short/long/quick/sudden/gradual event of your being ineligible [...]

In fact, we would rather treat *in the event of* as a fixed phrase, just as the fact that *by virtue of* takes POSS-*ing* does not suggest that POSS-*ing* denotes virtues. Only 2 cases of event-like shell nouns exist outside the structure *in the event of*, involving *event* and *act*, and they refer to concrete happenings.⁹

- (11) a. Could it be that the people of this country are storing up champagne to celebrate the wondrous event of *the Tories*’

⁹Example (11a) has a plural ending in *s* as possessor and should have been deleted according to the data cleaning process.

- being smashed at the next election?* (BNC)
- b. The secularist looking on will see the act of *his taking the flowers to her grave* as symbolic [...] (BNC)

Do these examples suggest that POSS-*ing* sometimes denotes events? There are reasons to believe that shell nouns are not a good argument supporting ontological claims. Bennett (2002) criticizes the reasoning that uses shell nouns, saying that they are “pathological phrases” used by philosophers and are “false labeling”, while pointing out that an appositive use like **the event, his answering her* would be felicitous if POSS-*ing* denoted events (Bennett, 2002, p. 52).¹⁰ One could argue that the POSS-*ing* is mapped to corresponding events via the use of shell nouns, without denoting an event itself. For example, in Grimm and McNally’s (2015) account, *the event/act of* could contribute a instantiation relation that provides a token for the event kind described by the POSS-*ing*. Peterson (1997, pp. 139–145) also suggests a means of deriving events from facts.

While *event* is a prototypical ontological object, one does not feel compelled to see *act* as one just because it is used as a shell noun. Instead, POSS-*ing* offers enough descriptive content to characterize the act under discussion without any crucial ontological commitment. There are a variety of other shell nouns that do not suggest events in my collection,

¹⁰Some native speakers that I have consulted accept the appositive use. My data collection contains a few instances of POSS-*ing* used as appositives, but the shell nouns (*circumstance, emphasis, bond, parallel*) do not stand for interesting ontological objects nor do they imply the status of their POSS-*ing* appositive. One case, however, suggests that POSS-*ing* represents something directly perceptible:

- (I) [...] that the sign he observes directly – the bees, *Rabbit’s saying “yes”* – should be correlated with honey, so that the belief he infers from the sign will be true. (BNC)

There is also a case where ACC-*ing* is used as an appositive of *event*:

- (II) This was partly because of events that were going on around me: *Kathleen building towards her retirement* and, as was to become highly significant, Katrina deciding that she wanted to make a move as well. (BNC)

such as *danger*, *fact*, *idea*, *impression* and *possibility*. Likewise they imply that POSS-*ing* can be used to characterize abstract entities, instead of contributing ontological objects of their own kind:

- (12) a. The danger of *their* [the tools’] *being stolen* is often not appreciated, and stolen tools are seldom recovered. (BNC)
- b. The fact of *his being in the water* clouds things a bit, because it alters normal body cooling. (BNC)
- c. They can do what they like to me, but I hate the idea of *your being messed about*. (BNC)

Finally, there are two instances of *the manner of* + POSS-*ing* that raise concerns about the abstractness of POSS-*ing*:

- (13) a. The driver must obey lawful instructions on what he does and also on “the manner of *his doing it*”. (BNC)
- b. The manner of *his handling his departure from McLaren* was, however, characteristically inept. (BNC)

Manner is ambiguous between a shell noun and a possessee. As a shell noun, *manner* would suggest that POSS-*ing* can be used to characterize a manner. This is unsatisfactory because neither *his doing it* nor *his handling his departure* is typically associated with a manner. As a possessee, it implies that its possessor demonstrates a manner, but a POSS-*ing* cannot do so if it denotes an abstract entity. The following sentence has an acceptable reading in which the fact that he (instead of anyone else) handled his departure was unsuitable, but the reading that he handled his departure in an incompetent way is unavailable.

- (14) His handling his departure from McLaren was inept.

In these examples, the manner has to come from an event characterized by the POSS-*ing*. The problem is why such an event is accessible in this way, but not when POSS-*ing* combines directly with most narrow containers.

2.2.2. Temporal expressions

Many narrow containers express a temporal relation with their complements. The incompatibility with such containers means that the denotation of verbal gerunds is not located in time. This subsection discusses temporal verbs and prepositions, and other temporal expressions from the corpus that allegedly relate POSS-*ing* to time.

Temporal verbs express the duration of an event (*take up (time), last*), the temporal location of an event (*begin, end*) or the relative location of two events (*precede, follow*). We have seen that POSS-*ing* is not commonly used in argument positions, so it is unsurprising that these verbs are not attested to take POSS-*ing*. However, there are 4 cases with *followed by* and *coincide* suggesting that the ban is not absolute:

- (15)
- a. This mortmain legislation was followed by *their being licensed to acquire lands and rents*. (BNC)
 - b. Hormone analogues and other anti-herbivore compounds have evolved, followed by *their being overcome by certain groups of herbivores*, some even using the toxins in their own defence. (BNC)
 - c. [...] *this business of Lee being flung out by Andy and being put back into the job centre* coincides with *my being very tight on money*. (BNC)
 - d. Happily, *my finally getting to meet him* coincides with the release of one of Morrissey’s great records [...]. (BNC)

The verb *coincide* has not been mentioned as a temporal verb. *Coincide* implies overlap, though its dimension is unspecified: things coincide by having the same degree on a scale (16a), objects by occupying the same space (16b), two events by overlapping in time or space (16c), two ideas by sharing their content (for example, *Clay’s proposal coincided with what George was planning*). Two facts may coincide by being true of the same object (16d).

- (16)
- a. In addition to the urban congestion, there were two new fac-

- tors, more or less coinciding in impact. (BNC)
- b. The leaf tracing is then pasted on to the assembly so that the centre vein coincides with the join. (BNC)
- c. The first detachment of the Moors and foreign legionaires crossed from Morocco to the Spanish mainland on 19 July, an action which coincided with military revolts in Seville, Cadiz and Barcelona. (BNC)
- d. Britain has the worst regional inequality in Europe [...] The UK also has one of the most centralised systems of local government [...] It seems improbable that these two facts coincide by chance.¹¹

Returning to (15c) and (15d), these two instances of *coincide* connect event descriptions that do not share participants or space, especially in (15c) where *my being very tight on money* is stative. Instead, they must overlap in temporal location.

Temporal prepositions are also claimed to be narrow containers, with the following examples by Vendler (1967b, p. 139):¹²

- (17) a. *Everything was quiet until his singing the Marseillaise.
- b. *The trouble started after his singing the Marseillaise.

However, several temporal prepositions are found to take POSS-*ing* in my collection, including 17 examples of *before*, *after*, *upon*, *between* and *prior to*.

- (18) a. First, the procedure for approving the establishment of courses –; before *their being submitted for academic validation by the CNAA* – was administered by HMI [...] (BNC)
- b. This concept met resistance in Tehran, particularly as Iraq underlined its position with another offensive just after *Iran’s accepting the principle of a cease-fire*. (BNC)

¹¹<https://www.resilience.org/stories/2023-01-24/where-levelling-up-funds-go-doesnt-matter-they-arent-supposed-to-work/>

¹²The judgments are Vendler’s.

- c. People from the stations we visited in such areas, or whom we encountered upon *their being transferred to Easton*, felt policing there was not typical [...] (BNC)
- d. [...] delays incurred in the processing of such items between *their leaving the Library* and subsequently returning to it, will remain outwith the Library’s control. (BNC)
- e. I don’t know whether Dersingham knew him prior to *his appointing him*. (BNC)

In Chapter 5, I will take a closer look at these cases and argue that they also suggest that the referent of POSS-*ing* is temporally located, which constitutes a problem for most ontological proposals.

Finally, POSS-*ing* is found as post-modifier of measurements of time, or even the word *time*:

- (19)
- a. “He doesn’t,” Cara agreed, “which is why it’s even more fantastic that after weeks and weeks of *my buttering up his secretary* I’ve eventually pulled it off.” (BNC)
 - b. However, within six months of *our treating her*, she had regrown a new hip joint. (BNC)
 - c. From this point of view, opportunities must have seemed slow to come, but de Valois gave him at least one chance every year from the time of *his joining the company*. (BNC)

(19a) may be explained, as the case with shell nouns, by the POSS-*ing* providing the descriptive content that characterizes the time period, but for POSS-*ing* to have a temporal location will greatly facilitate the use of (19b) and (19c).

2.2.3. Miscellaneous narrow containers

This subsection discusses a few narrow containers mentioned in the literature that do not fit in any general categories. Vendler (1968) lists *imitate*, which intuitively requires some manner or concrete actions to be imitated. This verb is not found to take POSS-*ing* in my collection.

Horn (1975), who is mainly concerned with the syntax of gerunds, adds psych verbs to the narrow containers, including *cherish*, *enjoy* and *detest*, which describe the attitude of an experiencer subject towards the object. These specific words are not found in my collection, but verbs in the same class (Levin, 1993, p. 191) are attested:

- (20) a. “I hate *your making a joke of it*,” says Rose, pulling her hair away. (BNC)
b. “And Harold,” said Charles in a firmer tone, “I very much appreciate *your telling me the news so kindly*.” (BNC)
c. This not only reinforces our licence to operate in established areas but also supports *our being welcomed to new areas where we are developing our business*. (BNC)

Considering that one can direct their attitude towards either concrete happenings or abstract entities, there is no reason why psych verbs should reject verbal gerunds.

Another verb from Horn (1975) is *avoid*,¹³ which is also found to take POSS-*ing*. Intuitively, both concrete entities and potential situations can be avoided:

- (21) a. To avoid *his being rounded up by the Germans for STO (Service du Travail Obligatoire) and sent to the munitions factories in the east*, Montaine and Mme Gurigny hid Jean-Claude in a sunken hollow [...] (BNC)
b. Are we making representations to widen the terms of citizenship in those three states to avoid *their being turned into three Ulsters*? (BNC)

Heyvaert et al. (2005) notice that some verb pairs similar in meaning and usually tied together in grammars behave differently with POSS-*ing*: *pre-*

¹³Horn also mentions *deny*, which is listed by Vendler (1967b) as a loose container because it commonly takes *that*-clauses, indicating that abstract entities such as propositions are accepted. Although *deny* is not attested to take POSS-*ing* in my collection, this is unlikely to have any ontological relevance.

vent takes POSS-*ing* but *stop* does not; *remember* does but *forget* does not. The authors associate this asymmetry to a general decrease in the use of POSS-*ing* from 20th century onwards, but find the behavior of individual predicates unpredictable. My data collection confirms their observation: there are 27 instances of *prevent* but only 1 of *stop*, 7 instances of *remember* but 0 of *forget* taking POSS-*ing* as direct complement. Two examples of *prevent* and the only instance of *stop* are shown below:

- (22) a. I returned the folders to Mellows during the lunch hour with a note explaining that union instructions prevented *my undertaking the work*. (BNC)
- b. Garcia, in turn, accused the five commission members of being “delinquents with political ambitions” intent on preventing *his making a political comeback*. (BNC)
- c. “A week,” Dorothea said. “What is there to stop *your visiting me* for a week?” (BNC)

The difference between *remember* and *forget* is likely not ontological in nature because any object, event or informational unit may be remembered or forgotten. One instance of *forget about* is attested:

- (23) [...] people connected with the Ballet Club had forgotten all about *John’s having danced with them* so early [...] (BNC)

Prevent and *stop* can be argued to be relevant. If a prevention is successful, then what is prevented does not exist either before or after the prevention. The object of *prevent* is an intensional entity which is similar to a kind: the prevention stops the kind from being instantiated by a token (Condoravdi et al., 2001). *Stop*, on the other hand, when taking an event-like object, means that the object ceases or comes to an end, and therefore presupposes that the object was ongoing before being stopped. It is therefore natural, following other evidence that POSS-*ing* does not denote individual events, that POSS-*ing* is dispreferred as complement of *stop*.

Finally, there are a couple of cases suggesting that POSS-*ing* is occa-

sionally used to refer to a concrete and dynamic action:

- (24) a. *So your turning a page of the NI magazine in Toronto, say,*
could so disturb the air as eventually to cause a hurricane in
Melbourne (or vice-versa). (BNC)
- b. *It is a cry of triumph, greeting God's showing himself in the*
midst of his people. (BNC)

An abstract entity cannot disturb the air or be greeted, so the *POSS-ing* in the examples above should refer to concrete entities, likely events. The question of which factors contribute to the possibility of using *POSS-ing* to refer to events has to be left for future research. I will just mention a few hypotheses: first, the complexity of the sentence can be relevant because a larger distance between *POSS-ing* and the eventive predicate may reduce the perceived unacceptability; second, the less prototypical a predicate is in indicating events, the less sensitive the speaker is to the unacceptability it evokes. Compared to typical eventive predicates like *happen* and *take place*, *disturb the air* makes it less obvious that it expects the subject to denote an event. In addition, the lack of synonymous event-referring phrases may also contribute to this use. *Clay's pounding the metal flat*, for example, does not have a corresponding deverbal nominal or *-ing-of* form. A speaker that wishes to talk about such an event may find herself without any other choice but verbal gerunds.

2.3. Discussion and collection of ACC-ing data

ACC-ing consists of an NP or an accusative pronoun followed by an *-ing* form that, if its argument structure permits, is able to take a direct complement. The preceding NP or pronoun is perceived as the subject of the *-ing* form. However, sequences that follow this pattern are ubiquitous and not all of them are *ACC-ing*. For example, when the *-ing* form acts as a modifier of the NP, the phrase is headed by the NP and therefore is not *ACC-ing*:

- (25) Every day *the virus causing AIDS* is infecting more young people. (BNC)

In the above example, the predicate *infect* makes sure that its subject is a virus, not an abstract object or an event. Sometimes the context is less clear, where both a post-modified NP reading and an ACC-*ing* reading are available. For example, the chronicler in (26) may refer to those Slavs and Antii who crossed the Danube and attacked Illyria, or to the fact that the Slavs and Antii did so:

- (26) One ancient chronicler, Prokopie Kesarinski, refers to *the Slavs and Antii crossing the Danube almost every year and attacking Illyria* [...] (BNC)

Attempts to automatically filter a large corpus for all examples of ACC-*ing* have shown significantly lower accuracy than for other gerund types (S. Grimm, personal communication, July 5, 2022). As in the case of POSS-*ing*, I do not intend to obtain an exhaustive collection of ACC-*ing* from the BNC, but a large enough one with lexical diversity. Applying the following pattern, it is possible to collect ACC-*ing* from the BNC excluding most other structures that have a similar appearance.

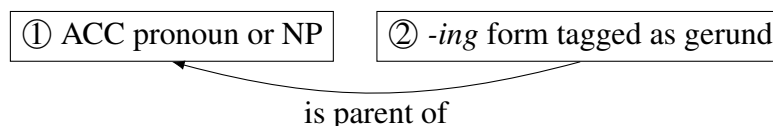


Figure 2.5: Pattern to find ACC-*ing*

There are several things to note in this pattern. In the parsed version of BNC that I used, gerunds and present participles share the same tag which is different from that of common nouns, thus excluding compounds like *deer hunting*. Specifying that the *-ing* form is the parent of the accusative NP helps exclude most cases in which the *-ing* form modifies the preceding NP.¹⁴ Finally, it is not necessary to limit *-ing* forms to those taking

¹⁴The parsing is not always reliable in this regard and the results will still contain *-ing*

direct complements as in the case of *POSS-ing*, because *ACC-ing* with intransitive verbs cannot be confused with nominal gerunds.

However, there are a few common structures that are consistently found by this pattern but are not usually discussed as *ACC-ing* in the literature, belonging to two main types: NP + *V-ing* complements of certain verbs, and absolutes. They are largely ignored in the literature focusing on the semantics of verbal gerunds, especially when based on introspective data, but they call the definition of *ACC-ing* into question.

2.3.1. Five *ACC-ing*-like structures

Among the transitive verbs that take NP + *V-ing* complements, there are three major types that are not typically considered as *ACC-ing* contexts. The first one is perception verbs. We have seen that perception verbs do not select for *POSS-ing*, but they commonly take a direct complement with an *-ing* form.

- (27)
- a. She could hear *him repeating phrases to himself* through the thin wall between her room and his. (BNC)
 - b. Cameron sensed *Menzies waiting for some words* – any words. (BNC)
 - c. I felt *it annihilating me*. (BNC)
 - d. More than once I have seen *a hapless opponent reaching down to scoop a front kick that never comes [...]* (BNC)

The complement of perception verbs has to be a perceptible object.¹⁵ If such complements count as *ACC-ing*, one will have to admit that *ACC-*

modifiers which need to be manually cleaned. Conversely, some *ACC-ing* instances are incorrectly parsed as an NP and an *-ing* modifier, but they will be ignored because the pattern in Figure 2.5 already returns a large enough amount of data for the current study.

¹⁵Most perception verbs take *that*-clauses without entailment of direct sensory perception: *George saw/heard that Clay won the game* does not entail that George saw or heard any part of an event. But except for *see* which has a wider range of meanings, this use is limited to *that*-clause complements of perception verbs. **George heard the low quality of the soil* cannot be interpreted as *George heard that the quality of the soil was low* and is unacceptable because the low quality cannot be directly heard.

ing denotes a concrete entity in this context, which is undesirable for a consistent interpretation of ACC-*ing*.¹⁶ Complements of perception verbs have been analyzed syntactically as small clauses (Reuland, 1983; Svenonius, 1994), bare vPs (Pires, 2006), NP and *-ing* separately as complements of ditransitive object control predicates (Pires & Milsark, 2017), among others, and semantically as states of affairs (Svenonius, 1994) or events (Bužarovska, 2002).

The second type consists of verbs with a causative meaning. Their NP + V-*ing* complement describes the activity or state that the NP is made to involve in. I will refer to them as quasi-causative verbs.¹⁷ Typical members of this type are *keep*, *set*, *have*, *get*, *start* and *send*:

- (28) a. The object is always to keep *your centre-line facing the opponent* [...] (BNC)
 b. The memoir sets *us asking if Philip Roth knows who he is*. (BNC)
 c. It’s just great to have *Marie touching me like this*. (BNC)
 d. Even in the wet, it was almost impossible to get *the test car’s tail moving* [...] (BNC)

These structures are not discussed in the ACC-*ing* literature. Myler (2014) and Palucci (2023) study the causative *have* and distinguish *have* + NP + V-*ing* from *have* + NP + V. Palucci analyzes the NP + V-*ing* structure as a small clause encoding a result state, which holds because of the causing event.

The third type is heterogeneous: it includes verbs like *catch*, *find*, *show* and *leave* that do not have a causative meaning or involve sensory perception. Huddleston (2002, p. 1238) groups these verbs together with most verbs in the second type except *have* and *get*, for they all take NP + V-*ing* but not NP + *to*-infinitive or bare infinitive, and they also reject

¹⁶It is interesting to notice that some studies that concern both ACC-*ing* and perception reports, such as Portner (1992) and Asher (1993), would limit the discussion about perception to bare infinitive complements.

¹⁷I owe the terms “quasi-causative” and “quasi-perception” (see below) to Robert Truswell (personal communication).

POSS-*ing*.¹⁸

- (29) a. Similarly, when she catches *me watering my plants on the balcony we share*, she says [...] (BNC)
 b. [...] we never find *him wondering whether perhaps Raskolnikov is thinking this* [...] (BNC)
 c. This view, taken during the first month of operation, shows *three-car unit No C312 entering the station* [...] (BNC)
 d. They have to live with the fear of sudden attacks that leave *them struggling to breathe*. (BNC)

I will refer to this type as quasi-perception verbs because *catch* and *find* are similar to perception verb in that the event described by these verbs overlaps with the embedded one in time and space, though the name is obviously unsuitable for *leave*. This type is also not mentioned in the ACC-*ing* literature. In the next subsection, I will discuss what a typical ACC-*ing* is and compare the behavior of the three types of NP + V-*ing* complements with typical ACC-*ing*.

For those who prefer to distinguish between gerunds and present participles, the -*ing* form in the three types above may simply appear as participles, thus dismissing the question of whether they are ACC-*ing*. Gerunds are traditionally seen as nominalizations and occupy positions of noun phrases; participles take adjectival and adverbial positions, and therefore cannot head a noun phrase. This distinction is not at all clear (De Smet, 2010): one could follow Huddleston (2002) in assuming a single category of “gerund-participials”, or even treat it as a gradience (Aarts, 2006). This discussion is necessary for us because the corpus tagging does not assume such a distinction, and internally, we find a predication relation between the subject of an ACC-*ing* and the gerund, as well as between the NP and a participle modifying it.

The fourth type of questionable ACC-*ing* is absolutes:

- (30) a. “Ah, so that’s the way the wind blows, is it?” said Henry,

¹⁸*Leave* takes NP + *to*-infinitive: *They left me to starve*, but this *leave* is treated as a different entry and the NP as an ordinary object (Huddleston, 2002, p. 1233).

his mind beginning to stray. (BNC)

- b. We are not going to have an affair, said Lucy, *hand shaking a little on her cigarette.* (BNC)

Absolutes are usually related to free adjuncts: both are sentential adjuncts that typically describe a situation that is simultaneous with the matrix clause, but also interact with the matrix clause in various ways (Stump, 1981). The difference is that a free adjunct takes a component of the matrix clause—usually the subject—as its subject (31), while an absolute has its own subject (30a):

- (31) [...] said Henry, beginning to feel uncomfortable.

The fifth type is augmented absolutes, which are absolutes preceded by *with* or *without*.

- (32) a. Solo shows and mixed exhibitions are more common, with the group show playing a less important role in the market. (BNC)
- b. With the Irish party abstaining, both English and Irish Roman catholic bishops began to pressurize the leader of the Irish party [...]. (BNC)

Although bare and augmented absolutes show no significant difference in their interpretation, the augmented absolute (32b) can be substituted for an event-referring NP thanks to the preposition (33), but the bare absolute cannot (34):

- (33) With the abstaining of the Irish party, both English and Irish Roman catholic bishops began [...]

- (34) a. *[...] said Henry, the straying of his mind.
b. *[...] said Lucy, the shaking of her hand on her cigarette.

Absolutes present a different problem from that of the first three types because there is a clear predication relation between the accusative NP and the *-ing* form, making it a clause-like structure. As Stump (1981,

p. 10) points out, the accusative is not used as a marker of a non-subject function, but rather marks the preceding NP as the subject of a non-finite clause, which can be interpreted and even evaluated independently from the matrix clause. Stump (1981) considers both bare and augmented absolutes as involving a participle rather than a gerund because the *-ing* form is substitutable by other predicative expressions such as past participles and adjectives:

- (35) With the Irish party {kept from intervening/unable to react}, both English and Irish Roman catholic bishops began [...]

The substitution is expected to be impossible in the case of gerunds, because the gerund is the noun head of the phrase. This is obviously the case for *POSS-ing* because only nouns take possessors (36a); it should also be impossible for *ACC-ing* in positions exclusively for NP, such as after most prepositions (36b), though such positions also accommodate small clauses (Svenonius, 1994).

- (36) a. Clay’s {winning the game/*made champion/*on the podium}
b. The situation changed due to Clay {winning the game/?made champion/?on the podium}.

Finally, these five types of *ACC-ing*-like constructions are extremely common in the corpus. The following distribution was obtained from the first 50 million tokens of the BNC by searching for the pattern in Figure 2.5 on page 48 with an additional rule that the *-ing* form takes a direct complement, and then cleaning the data manually. Table 2.3 shows that the three types of verbs taking NP + V-*ing* direct complements, absolutes and augmented absolutes each account for about a quarter of the data; the rest of the data, which is also about a quarter of all the constructions attested, is usually seen as *ACC-ing*. I will refer to them as “typical *ACC-ing*” for lack of a better term.

Type	Raw frequency	Percentage
Contexts for questionable NP + V- <i>ing</i>		
Perception	39	12.5
Quasi-causative	17	5.4
Quasi-perception	17	5.4
Bare absolute	74	23.7
Augmented absolute	79	25.3
Typical ACC- <i>ing</i> according to syntactic contexts		
Subject	3	1.0
Object	30	9.6
After preposition	36	11.5
Other	17	5.4
Total	312	99.8

Table 2.3: Distribution of ACC-*ing*-like constructions

2.3.2. Testing for ACC-*ing*

There is no generally accepted diagnostic of ACC-*ing*. As a result, the NP + V-*ing* structure has been referred to by different names and may cover slightly different ranges of phenomena as long as they share a syntactically consistent analysis. Reuland’s (1983) NP-*ing* construction contains both typical ACC-*ing* and absolutes because they share the same government pattern; Pires (2006) talks about clausal gerunds, which includes typical ACC-*ing*, PRO-*ing*, free adjuncts and absolutes for shared control properties. As far as I know, the complement of perception, quasi-causative and quasi-perception verbs are never counted as ACC-*ing*.

An important factor that contributes to such NP + V-*ing* complements not being counted as ACC-*ing* in the literature is that those verbs do not take POSS-*ing*. The assumption is that POSS-*ing* and ACC-*ing* should overlap in their function and meaning, but this reasoning has two problems: first, the assumption that POSS-*ing* and ACC-*ing* denote similar, if not identical ontological objects, could be targeted for scrutiny; second, the focus of ontological research around POSS-*ing* has always

been narrow containers, and apart from the typical loose containers from Vendler (1967b) there is little discussion about what predicates actually take *POSS-ing*. Corpus data may shed light on the second point. The following are the most frequent selectors of *POSS-ing* that are verbs taking *POSS-ing* as object, unselected prepositional phrases (excluding *of*, which has been shown in Table 2.2) and selected prepositions in my *POSS-ing* collection, along with their raw frequency:¹⁹

Verb	Freq.	Prep.	Freq.	Selected Prep.	Freq.
prevent	27	without	62	lead to	59
justify	11	despite	20	result in	55
be	10	due to	16	depend on	26
mind	8	by	14	reason for	14
involve	7	on	12	lie in	12
remember	7	in	11	insist on	12
appreciate	5	in spite of	10	consistent with	7
avoid	4	against	8	arise from	7
mean	4	prior to	7	consist in	7
mention	4	about	7	objection to	7

Table 2.4: Top selectors of *POSS-ing* in my collection

Setting aside frequency, verbal selectors of *POSS-ing* in my data collection can be grouped into the following types:²⁰

- (37) **Psych verbs:** love, like, hate, dislike, tolerate, mind, bear
Characterize verbs, or verbs of memory and imagination: remember, recall, recollect, imagine
Verbs of inhibition: prevent, stop
Verbs of relevance: involve, feature
Verbs of communication: mean, mention, admit

¹⁹Selectors that appear with the same frequency are in alphabetical order. Other verbs that occur four times are *recall* and *resent*. A preposition is counted as selected if the choice of preposition depends on the predicate before it. *View to* also appears 7 times.

²⁰I have tried to take, wherever possible, the names of the classes from Levin (1993).

When applying tests to contexts of ACC-*ing*-like structures, I will use the most frequent verbal selectors of POSS-*ing* as contexts of typical ACC-*ing*. Apart from *appreciate*, all the other top 10 verbal selectors also appear to take ACC-*ing* in the collection that I will describe in the next subsection.

The first test is based on the assumption that ACC-*ing* is a nominalization: being a nominal phrase, ACC-*ing* should be replaceable by other NPs. Substitution by an NP, which I exemplify with a nominal gerund similar to the original complement, is only possible in perception verb and typical ACC-*ing* contexts. The following examples, in the order of perception verbs (38a), quasi-causatives (38b), quasi-perception verbs (38c) and typical ACC-*ing* selectors (38d),²¹ demonstrate that quasi-causative and quasi-perception verbs are distinguished from typical ACC-*ing*.

- (38)
- a. She could hear/feel his repeating of the phrases.
 - b. *The memoir set/had/kept our asking of the question.
 - c. *She caught/found/left my watering of the plants.
 - d. Mary prevented/justified/didn't mind/remembered his burning of the building.

As a nominalization, ACC-*ing* should be one syntactic and semantic unit, the NP and the -*ing* form together being one object of the predicate. The second test, targeting this property, is that ACC-*ing* should be moved to the subject as a whole when the predicate is passivized. This test again distinguishes quasi-causative and quasi-perception verbs from other types, but some verbs taking typical ACC-*ing* also reject passivization, such as psych verbs:

- (39)
- a. Him repeating the phrases was seen/heard.²²
 - b. *Us asking the question was set/had/kept.
 - c. *Me watering the plants was caught/found/left.

²¹The rest of the examples in this subsection follows this order. The examples are based on (27a) (perception), (28b) (quasi-causative) and (29a) (quasi-perception).

²²My informants accept this sentence, but it is also reported as ungrammatical (Felser, 1998).

- d. Him burning the building was prevented/justified/*minded/remembered.

Displacement tests serve for a similar purpose. *What she V-ed was him repeating the phrases* and *Him repeating the phrases, she V-ed* are acceptable with perception verbs and most verbs taking typical ACC-*ing*.

The third test is to move the accusative NP alone to the subject position, which should not be possible for typical ACC-*ing* (Reuland 1983; Huddleston 2002, pp. 1205). If it is possible, the NP alone can be claimed to be the matrix object, and the *-ing* form is an adjunct or a secondary predicate. This test distinguishes perception and quasi-perception verbs from other types; quasi-causative verbs and those taking typical ACC-*ing* do not behave uniformly, with verbs of memory and imagination being a distinctive exception:

- (40) a. He was seen/heard repeating the phrases.
b. We were *set/*had/kept asking the question.
c. I was caught/found/left watering the plants.
d. He was *prevented/*justified/*minded/remembered burning the building.

At this point, it is worth mentioning that the internal discrepancy in each verb class is beyond the scope of this thesis. For example, the ability to passivize is not possessed by all perception reports:

- (41) a. We felt something dangerous approaching.
b. *Something dangerous was felt approaching.
c. *Something dangerous approaching was felt.
(Felser, 1998, pp. 353–354)

- (42) *It was seen snowing. (Felser, 1998, p. 366)

I am not concerned about these peculiarities because they do not consistently behave like what is expected of ACC-*ing*.

The fourth test, following the same assumption, is a semantic one. Huddleston (2002) claims that quasi-perception verbs involve an “ordi-

nary object” instead of a raised object (p. 1238) because the sentences with the *-ing* phrase removed are entailed by the original sentences. At the same time, the author states that the NP in the complement of perception verbs is a raised object, but does not become an argument of the verb. The entailment test, however, is affected by a number of factors. Due to requirements of sensory perception, sentences with perception verbs commonly entail the variation without *-ing* (43a). Huddleston (2002, p. 1206) argues that verbs like *feel* does not necessarily entail sensory perception of the NP (43b). The NP could refer to abstract or even imperceptible things (43c).

- (43) a. She heard him repeating phrases to himself.
→ She heard him.
b. You feel him imagining himself as the last rock of culture and civilization.
?→ You feel him.
c. I saw British industry winning a much larger share of the market.
?→ I saw British industry.

The same author (p. 1204) claims that quasi-perception verbs lead to such an entailment, in the sense that *She caught me watering my plants* can be paraphrased as *She caught me in the act of watering my plants*. However, the same can be said for perception verbs even if the entailment does not proceed.²³ Moreover, most verbs have different meanings with and without *-ing*:

- (44) a. She caught me watering my plants.
?→ She caught me.
b. We found him wondering whether it was true.
?→ We found him.

²³Example (43b) can be paraphrased as *You feel him in the state of imagining himself as the last rock of culture and civilization* and (43c) as *I saw British industry in the prospect of winning a much larger share of the market*.

Quasi-causative verbs, when omitting the *-ing* part, either become ungrammatical (**She started us.*) or take on a drastically different meaning (*She kept us running around* vs *She kept us*). This test is especially unreliable considering the heterogeneity presented by verbs taking typical ACC-*ing*: one cannot imagine/remember somebody doing something without imagining/remembering the person; psych verbs do not entail having the same attitude towards the NP; *prevent somebody* is simply ungrammatical.

The fifth test, closely related to the last one, is to replace the NP with an expletive. Since an expletive cannot be a matrix argument, it should be possible only with typical ACC-*ing*. In fact, there are many factors at play, which is well beyond the scope of this thesis.²⁴

- (45)
- a. She saw/heard there arriving a strange guest.
 - b. *She set/had/kept there being a problem with the project.
 - c. *She caught/found there being a problem with the project.
 - d. I ?meant/didn't mind/?prevented/imagined there being a problem with the project.

The sixth and last test, deriving from the assumption that ACC-*ing* is a gerundive construction instead of a participial one, involves substituting the *-ing* part with other predicates like past participles, adjectival and prepositional phrases. The possibility of substitution implies that the *-ing* part serves as a secondary predicate targeting the object. As is mentioned before, absolutes also accept the substitution (35). This test distinguishes most verbs taking typical ACC-*ing* (except for a few like *imagine* and *remember*) from all other types:²⁵

- (46)
- a. She saw/heard him {defeated by the opponent/in his room}.

²⁴For example, corpus searches with perception verbs show a preference for negation: *I don't see there being a problem*. There is also one instance of *find* in the Corpus of Contemporary American English (COCA): *You'd never find there being a vacant city*. Dynamicity of the complement is also relevant.

²⁵The ungrammaticality of **send/start Clay happy/(locked) in his room* may have to do with the matrix verbs requiring a dynamic event.

- b. She had/got/kept/*sent/?started Clay {happy/(locked) in his room}.
- c. She caught/found Clay {happy/(locked) in his room}.
- d. She *meant/*didn't mind/*prevented/imagined Clay {happy/(locked) in his room}.

In sum, most tests in this subsection serve the purpose of telling typical ACC-*ing* apart from other NP + V-*ing* complements without assuming a specific syntactic analysis: a typical ACC-*ing* is just a nominalization that makes the only object of the verbal selector. Quasi-causatives appear as the most distant class, not taking event descriptions or accepting any passivization. Quasi-perception verbs seem to take the NP as an object, and perception verbs, with a vast literature on them, present a even more complicated and heterogeneous picture.

It is therefore safe to exclude the three types from my data collection, but an important thing to notice is that even verbs taking typical ACC-*ing* do not make a homogenous category regarding such tests. Verbs of memory and imagination, which have been addressed by Portner (1992) and Pires (2006) with their complement recognized as ACC-*ing*, distinctively share many properties with perception verbs except that they also accept POSS-*ing* and PRO-*ing* (without an explicit subject). At this stage, there are two possible ways to look at this similarity: one is that *remember* and *imagine*, when taking NP + V-*ing*, are ambiguous between two syntactic configurations, one involving a nominalization and the other similar to prototypical perception reports; the other is that *remember* and *imagine* share the same structure with perception verbs, and the reason why perception verbs do not take POSS-*ing* is a semantic (or ontological) one, namely the denotation of POSS-*ing* cannot be perceived, but can be remembered or imagined. Regardless, I will follow the tradition of counting them as ACC-*ing* selectors.

2.3.3. Collection of ACC-*ing* data

Apart from the difficulties in distinguishing ACC-*ing* from superficially similar structures, the collection of ACC-*ing* data is complicated by the fact that ACC-*ing* is a more common structure than POSS-*ing*. To illustrate, the data in Table 2.3 (a total of 312 instances, in all of which the -*ing* form takes a direct complement, with 86 tokens of typical ACC-*ing*) were collected from the first 50 million tokens of the BNC, from the same amount of text 86 tokens of POSS-*ing* were found; in the next 50 million tokens, there were 119 tokens of typical ACC-*ing* out of 338 relevant instances and 68 tokens of POSS-*ing*. Even though a filter can be applied to the predicates selecting the target structure, there is a larger amount of data to be collected and manually cleaned.

My ACC-*ing* data was collected from the same copy of BNC, using the pattern in Figure 2.5 (p. 48) to include gerunds containing both transitive and intransitive verbs, and those involving *having* and *being*. Since complements of perception, quasi-causative or quasi-perception verbs do not count as ACC-*ing*, all the instances where the parent of the -*ing* form belonged to the three types were filtered out. As was the case of POSS-*ing*, instances with the pronoun *her* were excluded. In order to keep the size of the data manageable while maintaining the diversity of genres in BNC, I intended to collect a balanced sample from the whole corpus. Since the version of BNC I used was divided in over 4000 texts, I collected only the second occurrence of the target structure from each text, each with a preceding context of no more than 250 words. Choosing the second occurrence instead of the first one was to make sure that there was a large enough context before the target phrase. After cleaning the data manually, 452 tokens of typical ACC-*ing* were collected, along with 388 bare absolutes and 425 augmented absolutes.²⁶

Next, I take a closer look at the distribution of ACC-*ing* in my collec-

²⁶Absolutes were collected because in the version of the BNC I used, the matrix predicate is parsed as the head of the absolute, which makes bare absolutes difficult to distinguish from typical ACC-*ing* in the object position. At this stage, the set of augmented absolutes contains all the instances selected by *with* and *without* and not all of them are strictly augmented absolutes. They will be discussed in the next chapter.

tion and discuss a few questionable members that are rarer and harder to classify.

2.4. Preliminary observations of ACC-*ing* data

The distribution of typical ACC-*ing* by syntactic context is as follows:

Function	Raw frequency	Percentage
Nominative subject	5	1.11
Accusative object	191	42.26
Following noun and <i>of</i>	67	14.82
Following other prep.	153	33.85
Other	36	7.96
Total	452	100

Table 2.5: Distribution of ACC-*ing* by syntactic context

Comparing with POSS-*ing* (Table 2.1), ACC-*ing* tends to be used less as subject, more as object, and less after prepositions except for *with* and *without*.²⁷ Among the 5 instances of ACC-*ing* serving as subject, none of the predicates (*be*, *make*, *give*) is a narrow container.

One may notice that there is a bigger proportion of ACC-*ing* that appears in “other” positions than POSS-*ing*. ACC-*ing* is often used as a displaced subject, which is also possible for POSS-*ing*. Displaced subjects differ from absolutes in that the matrix subject is an expletive *it* or demonstrative *that* which can be replaced by the ACC-*ing*:

- (47) a. And she came in with and it was bad enough *him going off and leaving her* [...] (BNC)

²⁷This tendency is consistent with the data from Heyvaert et al. (2005) and Grimm and McNally (2015). Heyvaert et al. (2005) is based on an exhaustive collection of POSS-*ing* and ACC-*ing* from two small corpora, which enabled them to discuss the choice between POSS-*ing* and ACC-*ing* in the same syntactic contexts and in different registers. The present collection is not suitable for such an analysis.

- b. It is no use us trying to clobber the economy with high taxation any more than it's any use *Lawson clobbering the economy with high interest rates...* (BNC)
- c. How rare that was, *him smiling*. (BNC)

A context not shared with POSS-*ing* is following the copular, with *it* or demonstratives as subject:

- (48) a. [...] he says, I could tell you a few things about Fiona that'll make your hair curl. I say, I bet you couldn't. He says, I bet you I could. I said, don't talk. And this was *him trying to get off the subject when he was getting a bit nervous* I think. (BNC)
- b. “We're looking at the picture, papa,” Branwell said. “It's *the Duke of Zamorna and the Duke of Northangerland fighting in Glasstown*.” (BNC)
- c. Nobody thought of anything. It was just *everybody coming in for their meals*. (BNC)

These instances should be treated as ACC-*ing* and distinguished from those sentences with expletive subjects that McNally (1997) assimilates to existentials (49a). Such sentences, like existentials, take a postnominal -*ing* form, PP or adjectival phrase (AdjP), which is restricted to stage-level predicates (49b), and disallow necessarily quantificational DPs in the postcopular position (49c). It is argued that they should be interpreted like existentials.

- (49) a. It's/This is/That was my mother playing the piano/at the door.
 - b. *This is my mother devoted.
 - c. *This is most piano students performing.
- (McNally, 1997, p. 202)

This is not the case in the examples from my collection. First, the subjects (48a) and (48b) can be argued to be referential: *this* refers to the behavior of *him* in the context and *it* refers to (what is depicted in) *the picture*.

Second, *everybody* in (48c), being a quantificational DP, is not expected to appear in an existential sentence. I see these structures as identificational sentences, using ACC-*ing* to describe a situation. Not using POSS-*ing* is expected because concrete situations are involved in the context, but this also implies that ACC-*ing* is not limited to describing abstract entities.

2.4.1. Verbs selecting ACC-*ing*

Unlike POSS-*ing*, which appears mostly in non-argument positions, the most common position for ACC-*ing* is the object position. The following are the most frequent verbs selecting ACC-*ing* in my collection:

Verb	Raw frequency	Verb	Raw frequency
stop	54	involve	8
prevent	38	avoid	4
remember	26	like	4
imagine	16	recall	3
mind	12	excuse	3

Table 2.6: Ten most frequent verbs selecting ACC-*ing*

In general, the distribution of ACC-*ing* as direct complement is similar to POSS-*ing*: five of the most frequent verbs selecting ACC-*ing* are shared with POSS-*ing* (*prevent*, *mind*, *involve*, *remember* and *avoid*) and all of the ten verbs fall into some category of common POSS-*ing* selectors (37).

The top two selectors *stop* and *prevent* both have a common configuration of *stop/prevent* NP *from* V-*ing*.²⁸ Huddleston (2002) argues that *stop* has two meanings: *from* is optional in the sense of prevention (50a), and is impossible in the sense of ending an ongoing process (50b). Some speakers see the ACC-*ing* configuration in the first sense as degraded and a result of omitting *from*.

²⁸Heyvaert et al. (2005, p. 84) show that *prevent* is more common in the configuration with *from*: in the Cobuild Corpus, there are 367 (71%) instances with *from*, 120 (23%) taking ACC-*ing* and 32 (6%) taking POSS-*ing*.

- (50) a. Clay’s mother stopped him (from) playing games by confiscating his controller.
b. Clay’s mother stopped him (*from) playing Among Us when he barely started a new game.

Avoid is another verb close in meaning and has been judged to not take ACC-ing (Pires, 2006), but instances are found in the collection. *Avoid* in these examples can be replaced by *prevent*:

- (51) a. Additionally, it is wise to keep our partner apprised of decisions being made, if for no other reason than avoiding *them feeling left out*. (BNC)
b. [...] this, together with the required patent permissions, should be enough to to avoid *it being fingered by IBM’s corporate lawyers*. (BNC)

Prevent, *avoid* and *stop* in the sense of ending a process behave similarly in the tests for typical ACC-ing.²⁹ *Stop* taking ACC-ing would suggest that ACC-ing picks up an eventuality, since an abstract entity such as a fact cannot be interrupted while ongoing.

Among the less frequent verbs, there is a small set of depiction verbs, such as *picture*, *describe* and *depict*, which have disputable membership among verbs taking typical ACC-ing:

- (52) a. She could picture *Pete reading the letter on the end of a hard bed covered with a scratchy red blanket* [...] (BNC)
b. Fable 45 [...] describes *a man buying a parrot because he is so impressed by the bird’s saying “I think the more” when asked why it is not chattering like the other parrots in the shop*. (BNC)
c. At the heart of the city is the magnificent Council House

²⁹Their complements can be replaced by eventive NPs; passivization moves the complement to the subject position as a whole, instead of the NP only; -ing form cannot be replaced by past participle or PP. Unlike *prevent*, *avoid* and *stop* accept PRO-ing with PRO coreferential with the matrix subject. *Avoid X V-ing* does not entail *avoid X* but *stop X V-ing* seems to entail *stop X*, where the action being stopped is underspecified.

completed in 1879, crowned by a splendid dome, and a mosaic depicting *Britannia rewarding the city manufacturers*.
(BNC)

Huddleston (2002) groups these verbs together with quasi-perception verbs.³⁰ Levin (1993, p. 181) puts them in the same class as *imagine* and *remember*. Indeed, they pattern more like *remember/imagine* except in the PRO-ing test, where the subject of *describe* and *depict* usually do not control the PRO:

- (53) a. *This story_i describes PRO_i buying a parrot.
b. *This mosaic_i depicts PRO_i rewarding the workers.

These verbs are not attested to take POSS-ing except for one case of *describe* taking a complement ambiguous between POSS-ing and a nominal gerund:

- (54) I may not have seen the race, but I've had enough people describe both the race and Jackie's driving to know what a result it was.

With these verbs, it is hard to decide what ontological implications they have on their objects: the possibility of being described or depicted is not a typical property of any ontological object. They may remind us of verbs like *copy*, *photograph* and *memorize*, which according to Dowty (1991) take a representation-source theme, which he argues is a kind of incremental theme: a copy is produced through the act of copying, and each part of the copy can be mapped to a part of the copying event and to a part of the object being copied. What is copied, therefore, must be a concrete object with a part-whole structure: *partially copy the book* implies *copy parts of the book*. *Picture* and *describe* are similar in that they imply the creation of a (mental) picture, a description or depiction, but they do not work with *partially*, suggesting that their ACC-ing object is treated as a whole:

³⁰They are unlike quasi-perception verbs in that they take event nominalizations and their complement can be moved to subject position as a whole.

- (55) a. #She partially pictured Pete reading the letter.
 b. #The mosaic partially depicts Britannia rewarding the workers.

Eventualities can of course be depicted or described, but one can also find examples where *depict* takes *the fact that* as complement:

- (56) This shot doesn’t depict the fact that these little dudes show off in front of the camera.³¹

What it means to make a visual or textual representation of an abstract entity such as a fact is beyond the scope of the current discussion.

2.4.2. Shell nouns and temporal expressions

67 instances are found in my collection where ACC-*ing* is selected by *of*, which serves as a postnominal modifier. As I have commented about POSS-*ing*, *of* may carry two functions: it either represents a possessive relation between the noun and ACC-*ing*, or marks a shell noun characterized by an ACC-*ing*. I will not distinguish between the two functions. The following are the most frequent nouns taking an ACC-*ing* postmodifier in my data collection.

Shell noun	Raw frequency	Shell noun	Raw frequency
possibility	10	thought	3
idea	8	case	2
result	5	image	2
chance	4	presence	2
example	4	question	2

Table 2.7: Ten most frequent shell nouns of ACC-*ing*

Nouns like *event* and *act*, which Vendler categorizes are narrow containers, are not attested to take ACC-*ing* postmodifier. Among the expressions

³¹<https://www.flickr.com/photos/23598738@N03/2265673633/>

implying temporal relations, we can find rare instances of events *followed* by an ACC-*ing* (57a), temporal prepositions like *subsequent to* (57b) and explicit reference to *the time of* an ACC-*ing* (57c).

- (57)
- a. The resultant destabilization of covalent bonds brings about structural rearrangements on a timescale of 1-10 picoseconds, which under some circumstances can be followed by *material leaving the surface*. (BNC)
 - b. Now subsequent to *us getting that letter*, they told us that you'd signed on. (BNC)
 - c. At the time of *Charles taking his crown*, the Saracens were ruled by Abd ar-Rahman the Ommeyad [...]. (BNC)

Such examples may suggest that ACC-*ing* also demonstrates temporal properties on rare occasions.

2.4.3. Asymmetries between POSS-*ing* and ACC-*ing*

So far, I have only discussed those contexts which reject POSS-*ing* and accept ACC-*ing*-like structures. If POSS-*ing* and typical ACC-*ing* are both nominalizations and are semantically equivalent, ACC-*ing* should be able to appear in all the contexts where POSS-*ing* is used. However, Horn (1975) reported a series of verbs that take POSS-*ing* but not ACC-*ing*: *defend, admire, countenance, denounce, discuss, question, criticize*; Abney (1987) mentioned *deplore* and *defend*.

Such verbs are not attested to take either POSS-*ing* or ACC-*ing* in my collection, but their judgments can be examined against the experimental data by White and Rawlins (2016, 2020), who collected acceptability judgments of most verbs in English in multiple syntactic frames using bleached sentences, where all the content words, except the target verb, are represented as *someone/something*. One of the frames represents the verb taking ACC-*ing* as a complement: *Someone V-ed someone doing something*. Acceptability scores were marked on a 7-point Likert scale

and later normalized.³² The normalized scores are centered around 0: as expected, verbs that commonly take NP + V-*ing* as complement have high scores, such as *see* (3.73), *hear* (2.62), *catch* (2.59) and *find* (1.78), and intransitive verbs which are definitely ungrammatical with direct complements, such as *come* (-3.29) and *go* (-0.93), get low scores. Comparing these with normalized acceptability scores for the verbs in question, at least some of them are acceptable: *admire* (1.95), *criticize* (1.61), *defend* (1.23), *denounce* (2.37), *deplore* (1.59), *discuss* (2.88) and *question* (2.59). Even if these verbs prefer POSS-*ing*, it is unlikely due to an ontological difference.

These judgments from introspective data in the literature, however, may support a different hypothesis that I will pursue later in this thesis: POSS-*ing* is referential and ACC-*ing* is not. Note that most of these verbs report an attitude or action towards a given issue: one may defend or not defend an idea, but the existence of the idea is presupposed. POSS-*ing*, being a referential expression, is more suitable when used to address presupposed content. Another fact relevant to this hypothesis is that the subject position is a more common position for POSS-*ing* than for ACC-*ing*: POSS-*ing* as a referential expression is more likely to be known and talked about, while ACC-*ing*, with a tendency to appear in the object position, is more likely to introduce new content.

2.5. Chapter summary

In this chapter, I have presented my collection of POSS-*ing* and ACC-*ing* data from the BNC. The preliminary observations made in this chapter target the introspective data in the literature which have made the basis of many ontological proposals around verbal gerunds.

³²The data were collected from a large scale acceptability judgement task on 1000 clause-embedding verbs in 50 syntactic frames. When interpreting the scores, one thing to keep in mind is that *Someone V-ed someone doing something* is a highly abstract frame and participants may not see *someone doing something* as a constituent. For example, one may imagine, for *defend*, *Clay defended George saying he was a good friend* where the -*ing* form is a free adjunct.

The two verbal gerunds present different challenges. *POSS-ing* is a clearly identified structure, and I have focused on occasional instances of narrow containers and their implications for the ontological status of *POSS-ing*. For the most part, *POSS-ing* behaves consistently except that it appears in various contexts related to time. I come back to those data in Chapter 5.

ACC-ing shares the surface form with structures that are not commonly analyzed as *ACC-ing*, some appearing with narrow containers or contexts unsuitable for event nominalizations. Many tests are dedicated to filter for typical *ACC-ing*, which is assumed to be a gerundive nominalization with consistent syntax and sharing the distribution with *POSS-ing*. However, even typical *ACC-ing* contexts are heterogenous. One would happily exclude perception verbs to maintain the claim that *ACC-ing* denotes imperceptible, abstract objects, but when it comes to the complement of *stop*, which seems to be an ongoing process, we face the dilemma between attempting to prove it is not *ACC-ing* and considering *ACC-ing* as potentially event-denoting. On the other hand, when an NP + V-*ing* structure is not typically considered as *ACC-ing*, how different is its semantics from a real *ACC-ing*? These questions are left to be discussed at the end of the thesis. In the next chapter, I take a look at *with* and *without* and how they work with verbal gerunds, and argue that they reveal important properties of *POSS-ing* and *ACC-ing*.

Chapter 3

***WITH AND WITHOUT:* ASYMMETRY BETWEEN TWO VERBAL GERUNDS**

When *POSS-ing* and *ACC-ing* appear in the same contexts, they are usually thought to be interchangeable and have the same ontological status.¹ In this chapter, I highlight an asymmetry in the distribution of *POSS-ing*, which is not shared by *ACC-ing*: *POSS-ing* is often found as complement of *without*, but almost never of *with*; *ACC-ing*, on the other hand, is acceptable with both prepositions:

- (1) a. Clay won the game {#with/without} George’s supporting him.
b. Clay won the game {with/without} George supporting him.

This asymmetry, which has been unaccounted for in the literature, is described in Section 3.1. I argue that there are two uses of *with(out)* + verbal gerunds: one is a VP modifier and the other is a sentential modifier. Section 3.2 provides an interpretation for the VP modifier, which is a coordination between two event kind descriptions, resulting in a new event kind. Section 3.3 looks at sentential modifiers and classifies them according to

¹This chapter expands on my paper Huang (2021).

their rhetorical relations with the main clause. The asymmetry cannot be accounted for if the two verbal gerunds are equivalent in meaning. Section 3.4 puts forward two hypotheses about the difference between *POSS-ing* and *ACC-ing*: one is pragmatic in nature and hypothesizes that they are licensed in different contexts; the other is semantic and assumes that they differ in their ability to be anchored in time. The first hypothesis is addressed in Chapter 4, and the second in Chapters 5 and 6.

3.1. Data

In the Cambridge Grammar of the English Language, Payne and Huddleston (2002, p. 461) state that “a gerund-participle in complement function cannot take a genitive subject” after *with* and *without*, suggesting that *POSS-ing* is not expected to appear after *with(out)*. However, the study of Heyvaert et al. (2005), based on the Collins COBUILD corpus, observes that *without* does take *POSS-ing*. This combination is also found in my *POSS-ing* collection: 62 or 4.4% of the instances are preceded by *without*. Here are a few examples:

- (2) a. She [Darren’s mother] had been very ill and suddenly taken to hospital *without Darren’s knowing why*. (BNC)
- b. I sit here all day trying to persuade people to do the things they ought to have the sense to do *without my persuading them*. (BNC)
- c. This allows your sleeves to be knitted, weaving as you go, *without your having to consider any shaping at the sides*. (BNC)

In most of the cases, *without* is not selected by another predicate. The only exception is one instance where it follows a copular verb:

- (3) And if Davie’s principles make him what some might call “elitist” [...] it is not *without his having pondered the arguments about the place and function of elites and of high art in a democratic nation*

far more deeply than the bulk of his fellow countrymen. (BNC)

In contrast, Heyvaert et al. noticed that *with* does not select for POSS-*ing*,² an observation that they did not explain in the paper. 38 instances of *with* + POSS-*ing* are found in my collection; in 34 of them, the *with*-PP is complement of a verb or an adjective:

- (4) a. The primary concern of the story in Numbers 20 is not *with God's supplying the water* [...]. (BNC)
b. They [...] suggest that all the observations are consistent *with its having a low rather than a high velocity.* (BNC)

In one case, *with* is used in a comitative sense: the POSS-*ing* comes to mind together with the thought, probability theory and the Probability Calculus.

- (5) The thought must indeed come to mind *with* probability theory and the Probability Calculus, and *their being imported into causation*, despite what was said above about the logical consistency of probability theory and necessitation. (BNC)

The three remaining instances are similar to the use of *without* in (2) and may be seen as counterexamples to the generalization that *with* does not take POSS-*ing*. They will be addressed later in this chapter.

- (6) a. If the child is also refusing food, the problem could have developed *with the parent's trying to distract the child during feeding.* (BNC)
b. It led to a dialogue with Montefiore, *with my telling him about my friend who has had AIDS now for six years and who, thanks to AZT, is still alive.* (BNC)
c. *With Dad's being a builder* he's showing fellows how to get people out if a house is demolished. (BNC)

²The only two instances they found to take POSS-*ing* were a complement of a verb (*have to do with ...*) and a nominal postmodifier (*get enough help with ...*).

For the moment, we can assume that it is much rarer for unselected *with* to take POSS-*ing* than *without*. Moreover, restating *without* + POSS-*ing* in (2) using *with* + POSS-*ing* is hardly acceptable:

- (7) a. #Darren’s mother had been very ill and suddenly taken to hospital *with Darren’s ignoring the situation*.
- b. #I sit here all day trying to persuade people to do the things they ought to have the sense to do *with my being silent*.
- c. #This allows your sleeves to be knitted, weaving as you go, *with your feeling relaxed about the shapes*.

On the other hand, ACC-*ing* commonly appears after both *with* and *without*. The examples above can be restated using *with(out)* + ACC-*ing*:

- (8) a. Darren’s mother had been very ill and suddenly taken to hospital *with Darren ignoring the situation/without Darren knowing why*.
- b. I sit here all day trying to persuade people to do the things they ought to have the sense to do *with me staying silent/without me persuading them*.
- c. This allows your sleeves to be knitted, weaving as you go, *with you feeling relaxed about the shapes/without (you) having to consider any shaping at the sides*.

In my ACC-*ing* collection, there are 394 instances that follow *with* and 31 *without*. This ratio seems to be the inverse of POSS-*ing*, but it does not suggest that *without* + ACC-*ing* is less acceptable than *with*, since a small portion of *without* among augmented absolutes has been consistently documented in diachronic data since Middle English (van de Pol, 2019, footnote 2) and it is accepted and analyzed as the negative counterpart of *with* in the semantic literature (Stump, 1981). The following are two examples of *with* and *without* + ACC-*ing*:

- (9) a. Joe Ropati scored a final try for Warrington, *with Turner adding a sixth goal*. (BNC)
- b. Some trends happen *without anyone being quite sure why*.

(BNC)

Before analyzing the data, I wish to clarify some terminological issues. The term “augmented absolute” is commonly used for the structure *with(out)* + NP + V-*ing* which serves as a sentential adverbial. In the next section, I show that this structure can also be used as a VP modifier, but I reserve the term “augmented absolute” for its traditional sense in this chapter.

I will also refer to the NP + V-*ing* complement of *with(out)* as ACC-*ing* without presupposing a syntactic analysis or a gerund-participle distinction. One may be resistant to using the term ACC-*ing* for this structure and comparing it with POSS-*ing* because it is not seen as a gerund: in the traditional view, the V-*ing* part of an augmented absolute can be replaced by past participles, PPs and AdjPs, and therefore is a participle.

There are two reasons I do not distinguish NP + V-*ing* from ACC-*ing* in this chapter. First, absolutes share certain syntactic properties with ACC-*ing* and they are sometimes subsumed under the same syntactic category, such as “clausal gerunds” from Pires (2006). Even for researchers that distinguish gerunds from absolutes, it is admitted that verbal gerunds and augmented absolutes have converged to the point that they share the same surface forms and similar uses (Fonteyn & van de Pol, 2015; van de Pol, 2019). Second, if the NP + V-*ing* in augmented absolutes is not ACC-*ing*, *without* + NP + V-*ing* will be ambiguous. Under the assumption that typical ACC-*ing* appears in POSS-*ing* contexts, at least some instances of NP + V-*ing* following *without* should belong to typical ACC-*ing*. At the same time, if *without* is simply the negative counterpart of *with* in augmented absolutes, then the complement of *without* should not be ACC-*ing* either. This ambiguity cannot be easily resolved before analyzing the data.

In summary, the asymmetry described in this section is two-fold: on the one hand, *with* and *without* are different in that one rejects and the other accepts POSS-*ing*; on the other hand, POSS-*ing* and ACC-*ing* differ significantly in their ability to appear after *with*. I will provide a semantic interpretation for these structures based on their functions: either as a VP modifier or as a sentential adverbial.

3.2. VP modifier: creating a new event kind

With(out) + verbal gerunds can be divided into two classes according to their function in the sentence, which I will illustrate mainly using *without* + POSS-*ing*. One is a sentential adverbial. In (10a), the negation of the descriptive content of the POSS-*ing* is asserted and can be paraphrased as a coordination using *and* (10b). The *without*-PP can be placed at the beginning or end of the sentence (10c). (10d) is an example of *with* + ACC-*ing* as sentential adverbial:

- (10) a. *Without his realising it*, Alec’s voice had become as enthusiastic as his uncle’s. (BNC)
b. Alec’s voice had become as enthusiastic as his uncle’s, and he did not realise it.
c. Alec’s voice had become as enthusiastic as his uncle’s, without his realising it.
d. He set off across the marble lake at a canter, *with Helen panting behind*. (BNC)

Sometimes, the *with(out)*-PP has a conditional flavor. It is still a sentential adverbial, but neither the matrix clause nor the (negation of the) PP is asserted, but the conditional relation between them is. That is, in (11a), we do not know if negativity actually exists or if the addressee gives it life; we only know the relation between them. As a result, the PP can move freely and be paraphrased as a conditional (11a-b) or counterfactual (11c-d). *With* + ACC-*ing* is also used this way (11e).

- (11) a. Negativity cannot exist *without your giving it life*. (BNC)
b. Without your giving it life/If you don’t give it life/Unless you give it life, negativity cannot exist.
c. But dreams I couldn’t possibly have had *without his having really done those things*. (BNC)
d. Without his having really done those things/If he had not really done those things, I couldn’t possibly have had dreams (about them).

- e. [...] *with an apprentice riding him*, Pendero’s odds in the market would lengthen. (BNC)

The other function is a VP modifier. In (2b) and (2c), the *without*-PP is not adjunct to the main clause, but modifies a VP that can be embedded under a modal or another verb like *allow*. This makes the *without*-PP unable to move freely and (the negation of) its content is usually not asserted (12a-b). Sometimes, the meaning of the *without*-PP can be expressed by a manner adverbial (12c-d):

- (12) a. It is seldom that a week passes by *without my having several letters on the same theme*. (BNC)
b. ?Without my having several letters on the same theme, it is seldom that a week passes by.
c. There are other mothers who bring up boys in wartime *without their being brutalised*. (BNC)
d. There are other mothers who bring up boys in wartime successfully/in an affectionate way.

With(out) + ACC-ing is also found as a VP modifier:

- (13) Pass a long piece of string through each hole and tie the ends of the string to a carving fork, so the meat can be suspended in a pan *without it touching the bottom*. (BNC)

An indicator of the sentential modifier is that it tends to be separated from the rest of the sentence by commas, while the VP modifier is more likely to appear intonationally integrated to the main clause. The separation in intonation signaled by commas is, as Stump (1981, p. 3 and p. 8) points out, a common feature of free adjuncts and absolutes, but is not obligatory. The sentential modifier with a conditional flavor seems to fall between the two groups. The distribution of *with(out)*-PPs with and without commas shows a clear contrast:³

³The total number of *with(out) + ACC-ing* in the table is 416, less than the number reported in the last chapter. This is because some instances in which *with* is selected, such as *start with*, have been excluded. In 2 instances the *with*-PP is found in parenthe-

Type	With commas	Without commas
<i>with</i> + ACC- <i>ing</i>	315	70
<i>without</i> + ACC- <i>ing</i>	5	26
<i>without</i> + POSS- <i>ing</i>	14	47

Table 3.1: Use of *with(out)*-PP with and without commas

While *with* + ACC-*ing* tends to occur with commas, *without* + ACC-*ing* is usually used without commas. Even though commas do not directly correspond to the PP’s function as a VP modifier or a sentential modifier, *without*-PPs can be considered phonologically more integrated and “closer” to what it modifies. Although I have collected more instances of *without* + POSS-*ing* than ACC-*ing*, *without* + POSS-*ing* and ACC-*ing* have very similar distributions.

This section starts with an interpretation of *with(out)* + verbal gerunds as a VP modifier, with a special focus on *without*.

3.2.1. Semantic interpretation

The interpretation of *with(out)*-PP as a VP modifier has three main components: the verbal gerund, the preposition *with(out)*, and the way *with(out)*-PP combines with the VP it modifies. As stated in the first chapter, I assume the event kind analysis of verbal gerunds (Grimm & McNally, 2015) for convenience. The following is the representation of *George(’s) supporting Clay*:

$$(14) \quad \llbracket \text{George(’s) supporting Clay} \rrbracket = \lambda e_k [\cup \text{SUPPORTING}(e_k) \wedge \text{AG}(\text{george}, e_k) \wedge \text{TH}(\text{clay}, e_k)]$$

George(’s) supporting Clay is an event kind description consisting of the predicate *supporting*, the agent *George*, and the theme *Clay*.

Without and its counterparts in other languages have various senses, and some of them have been formally discussed (see Bosque 1980 and

ses.

Castroviejo, Oltra-Massuet, and Pérez-Jiménez 2015 regarding Spanish; Feigenbaum 2002 regarding French; Müller, Roch, Stadtfeld, and Kiss 2012 for German), but the use of *without* + POSS-*ing* or nominalizations in general has not been accounted for.

Bosque (1980) makes an observation contrasting *sin* ‘without’ in Spanish with the coordinating connective *y* ‘and’: two clauses connected by *sin* can be restated using *y*, but the reverse is not always possible. He concludes that the two parts connected by *without* need to be related or even seen as one event. This is also true for *without* + POSS-*ing*:

- (15) a. Taylor is good at fighting, and Oli is not good at it.
 b. #Taylor is good at fighting, without Oli’s being good at it.

(15b) strongly suggests a relation between Taylor’s and Oli’s capacities, without which the sentence is infelicitous. Although this is an example of sentential adverbial, the intuition that the two parts are closely related or even seen as one is crucial in the interpretation of *without*.

The basic interpretation of VP modifier is that of temporal overlap: in (12a), the passing of a week is simultaneous with the speaker’s writing of letters, and the sentence states that this combination of events seldom occurs. In (12c), the mothers’ bringing up of their boys coincides with the risk of them being brutalized.

I follow Grimm and McNally (2015) in assuming that the main predicate also begins as a kind description and is later instantiated by tense, and I propose that *with(out)* connects two event kind descriptions and produces a new one. To illustrate, (12a) contains in the main predicate an event kind description of a week passing by, and in *without*-PP an event kind description of *my having several letters on the same theme*. *Without* connects the two and produces the description of a new event kind, which is only instantiated by event tokens of a week passing by accompanied by the non-instantiation of *my having several letters on the same theme* during the same time span.

In the following interpretation, which represents the basic reading of temporal overlap, **R** is the realization relation that pairs an event token with its kind, $\tau(e)$ represents the time (interval) in which the event *e* oc-

curs, and \circ represents temporal overlap. *Without* connects two event kind descriptions P_{k1} and P_{k2} and produces the description of a complex event kind e_{k3} such that any instantiation of e_{k3} entails that the event kind described by the modified predicate (e_{k1}) is instantiated, and that at the same time, the event kind described by the *POSS-ing* (e_{k2}) is not instantiated. If the resulting complex event kind is to be realized, then the runtime of the complex event token $\tau(e_3)$ is identical to that of the event token corresponding to the modified VP $\tau(e_1)$.

$$(16) \quad \llbracket \text{without} \rrbracket = \lambda P_{k2} \lambda P_{k1} \lambda e_{k3} \exists e_{k1} \exists e_{k2} [P_{k1}(e_{k1}) \wedge P_{k2}(e_{k2}) \wedge \forall e_3 [\mathbf{R}(e_3, e_{k3}) \rightarrow \exists e_1 [\mathbf{R}(e_1, e_{k1}) \wedge \neg \exists e_2 [\mathbf{R}(e_2, e_{k2}) \wedge \tau(e_1) \circ \tau(e_2)]] \wedge \tau(e_3) = \tau(e_1)]]]$$

The interpretation of *with* simply removes the negation: any instantiation of e_{k3} entails that both event kinds e_{k1} and e_{k2} are instantiated and the two tokens e_1 and e_2 overlap in time.

$$(17) \quad \llbracket \text{with} \rrbracket = \lambda P_{k2} \lambda P_{k1} \lambda e_{k3} \exists e_{k1} \exists e_{k2} [P_{k1}(e_{k1}) \wedge P_{k2}(e_{k2}) \wedge \forall e_3 [\mathbf{R}(e_3, e_{k3}) \rightarrow \exists e_1 [\mathbf{R}(e_1, e_{k1}) \wedge \exists e_2 [\mathbf{R}(e_2, e_{k2}) \wedge \tau(e_1) \circ \tau(e_2)]] \wedge \tau(e_3) = \tau(e_1)]]]$$

Below is the derivation of the example (18). Note that the modified VP *Clay win the match* begins on the kind level and is instantiated by the tense operator PAST, which introduces an event token and locates it in the past. I use a version of PAST that Grimm & McNally adapted from Kratzer (1996). I also assume a way to resolve indexical expressions like *him*.

$$(18) \quad \begin{aligned} & \text{Clay won the match without George's supporting him.} \\ & = \text{PAST}(\llbracket \text{Clay win the match without George's supporting him} \rrbracket) \\ & = \text{PAST}(\llbracket \text{without} \rrbracket(\llbracket \text{George's supporting him} \rrbracket)(\llbracket \text{Clay win the match} \rrbracket)) \end{aligned}$$

$$(19) \quad \begin{aligned} \text{a.} \quad & \llbracket \text{Clay win the match} \rrbracket = \lambda e_{k1} [\text{WIN}(e_{k1}) \wedge \text{AG}(\text{clay}, e_{k1}) \wedge \text{TH}(\iota x \text{match}(x), e_{k1})] \\ \text{b.} \quad & \llbracket \text{without George's supporting him} \rrbracket = \lambda P_{k1} \lambda e_{k3} \exists e_{k1} \exists e_{k2} \end{aligned}$$

- $[P_{k1}(e_{k1}) \wedge^{\cup} \text{SUPPORTING}(e_{k2}) \wedge \text{AG}(\text{george}, e_{k2}) \wedge$
 $\text{TH}(\text{him}, e_{k2}) \wedge \forall e_3[\mathbf{R}(e_3, e_{k3}) \rightarrow \exists e_1[\mathbf{R}(e_1, e_{k1}) \wedge$
 $\neg \exists e_2[\mathbf{R}(e_2, e_{k2}) \wedge \tau(e_1) \circ \tau(e_2)] \wedge \tau(e_3) = \tau(e_1)]]]$
- c. **[[Clay win the match without George’s supporting him]] =**
 $\lambda e_{k3} \exists e_{k1} \exists e_{k2} [\text{WIN}(e_{k1}) \wedge \text{AG}(\text{clay}_i, e_{k1}) \wedge$
 $\text{TH}(\iota x \text{match}(x), e_{k1}) \wedge^{\cup} \text{SUPPORTING}(e_{k2}) \wedge \text{AG}(\text{george}, e_{k2}) \wedge$
 $\text{TH}(\text{him}_i, e_{k2}) \wedge \forall e_3[\mathbf{R}(e_3, e_{k3}) \rightarrow \exists e_1[\mathbf{R}(e_1, e_{k1}) \wedge$
 $\neg \exists e_2[\mathbf{R}(e_2, e_{k2}) \wedge \tau(e_1) \circ \tau(e_2)] \wedge \tau(e_3) = \tau(e_1)]]]$
- d. **PAST: $\lambda P \lambda t \exists e, e_k [t < \text{NOW} \wedge P(e_k) \wedge \mathbf{R}(e, e_k) \wedge \tau(e) = t]$**
 (Grimm & McNally, 2015, p. 91)
- e. **[[18]] = $\lambda t \exists e_3, e_{k3} [t < \text{NOW} \wedge \exists e_{k1} \exists e_{k2} [\text{WIN}(e_{k1}) \wedge$**
 $\text{AG}(\text{clay}_i, e_{k1}) \wedge \text{TH}(\iota x \text{match}(x), e_{k1}) \wedge^{\cup} \text{SUPPORTING}(e_{k2}) \wedge$
 $\text{AG}(\text{george}, e_{k2}) \wedge \text{TH}(\text{him}_i, e_{k2}) \wedge \forall e_3[\mathbf{R}(e_3, e_{k3}) \rightarrow$
 $\exists e_1[\mathbf{R}(e_1, e_{k1}) \wedge \neg \exists e_2[\mathbf{R}(e_2, e_{k2}) \wedge \tau(e_1) \circ \tau(e_2)] \wedge \tau(e_3) =$
 $\tau(e_1)]]] \wedge \mathbf{R}(e_3, e_{k3}) \wedge \tau(e_3) = t]$
 $= \lambda t \exists e_3, e_{k3} [t < \text{NOW} \wedge \exists e_{k1} \exists e_{k2} [\text{WIN}(e_{k1}) \wedge \text{AG}(\text{clay}_i, e_{k1}) \wedge$
 $\text{TH}(\iota x \text{match}(x), e_{k1}) \wedge^{\cup} \text{SUPPORTING}(e_{k2}) \wedge \text{AG}(\text{george}, e_{k2}) \wedge$
 $\text{TH}(\text{him}_i, e_{k2}) \wedge \exists e_1[\mathbf{R}(e_1, e_{k1}) \wedge \neg \exists e_2[\mathbf{R}(e_2, e_{k2}) \wedge \tau(e_1) \circ$
 $\tau(e_2)] \wedge \tau(e_3) = \tau(e_1)]]] \wedge \mathbf{R}(e_3, e_{k3}) \wedge \tau(e_3) = t]$

The simultaneity of the main clause event token and an unrealized event token from the gerund is however not obligatory, since temporal adverbials indicating a different time can be added to the *without*-PP:

- (20) a. It is seldom that a week passes by without my/me feeling exhausted the following Monday.
 b. There are other mothers who bring up boys in wartime without their/them developing violent behaviors in adulthood.

This means that the relation between the happening of an event which instantiates the modified event kind and the non-happening of an event which instantiates the event kind described by the gerund—I will refer to them as “modified event” and “gerund event” for short—is not necessarily temporal. In (20a-b), the *without*-PP is like a manner adverbial in the sense that the modified event happens in such a way that it does not lead

to the gerund event, but whether an event satisfies this criterion cannot be verified by the time the modified event ends, but rather until one is sure that the gerund event does not happen in the same world in a relevant time span. This implies that this modification results in a new event kind, instead of a subkind of the modified kind, because any instantiation of the modified kind is limited to the modified event itself without any specification about the world around it.

The following representation creates a description of a new event kind e_{k3} , whose instantiation entails the happening of the modified event and the non-happening of the gerund event in the same world:⁴

$$(21) \quad \llbracket \text{without} \rrbracket = \lambda P_1 \lambda P_2 \lambda e_{k3} \exists e_{k1}, e_{k2} [P_1(e_{k1}) \wedge P_2(e_{k2}) \wedge \forall e_3, i \\ [\mathbf{R}(e_3, e_{k3}) \text{ at } i \rightarrow (\exists e_1 \mathbf{R}(e_1, e_{k1}) \wedge \neg \exists e_2 \mathbf{R}(e_2, e_{k2}) \text{ at } i)]]]$$

To accommodate the basic reading of temporal overlap, it suffices to add the condition $e_1 \circ e_2$ to the relevant index. Again, the interpretation of *with* simply removes the negation.

This analysis captures the intuition that the *with(out)*-PP modifies the VP, resulting in a complex event kind that can be embedded under, e.g. modals, or be instantiated as the main predicate. Therefore, as put forward by Bosque (1980), the two events connected by *without* are now seen as one. The creation of a new event kind suggests that the modification of the VP is potentially non-monotonic, that is, the resulting complex event type is not a subtype of the “modified” kind, but a different kind with distinct implications. For example, in a context where Clay’s playing piano at midnight normally leads to his neighbor being disturbed, Clay’s playing piano at midnight without his neighbor’s hearing it does not. My analysis also makes the *with(out)*-PP a case of comitative coordination, which is the coordination of two NPs using a comitative construction, i.e. *with* or its counterparts in different languages. It has been argued that the comitative coordination of two NPs in Russian results in an asymmetric NP structure with a group denotation (McNally, 1993). Likewise, *with(out)*

⁴I have proposed (Huang, to appear) that temporal modification of event kind descriptions can be treated similarly, as a restriction on the world and time of possible event tokens that instantiate the given kind.

makes a comitative coordination between two event kinds and results in a new event kind that is asymmetric: its instantiation is the token of the modified event with requirements on world and time related to the gerund event.

3.2.2. Generic incausality

An important intuition about *without* + POSS-*ing* is that it implies that normally, when an event corresponding to the modified VP occurs, there should also be an event described by the POSS-*ing*. The use of *without* + POSS-*ing* constitutes an exception to such a regularity. The interpretation of *without* proposed above does not impose any restriction on the two event kinds that it connects, but when the hearer fails to interpret a relation between the two events, the sentence will likely be infelicitous (15b).

By having this implication, *without* is similar to concessive connectors like *however*. Evidence for this comes from the possibility of inserting *however* between *without* and POSS-*ing*.⁵

- (22) She had been very ill and suddenly taken to hospital without, however, Darren’s knowing why.

I apply the generic incausality analysis of Zieleke (2020) for German concessive connectors to the implicature derived from *without*. Zieleke argues that concessive connectors like German *dennoch* ‘however’ and *trotzdem* ‘nevertheless’ carry the conventional implicature of generic incausality: a regularity which generalizes over entities, predications and/or situations and tolerates exceptions. Therefore, *p dennoch q* asserts $p \wedge q$ and produces the implicature notated as $\text{GEN}(v)[P_p(v); \neg Q_q(v)]$, in which *P* and *Q* are predicates and *v* an unrestricted variable, which may

⁵I thank Sebastian Bücking for this argument. Note that the insertion of *however* is not always possible. It works better when the modified VP is not embedded, and though the modified VPs in (2b) and (2c) are both embedded, (2c) is better than (2b) after inserting *however*. The use of *however* may have independent restrictions that are not considered here, but the point is to illustrate the similarity between concessive connectors and *without*.

be entities, predications and/or situations, and may vary according to context, world knowledge and the hearer’s understanding. Generally, if $P_p(v)$ holds, then $\neg Q_q(v)$ also holds; that is why *however* expresses an exception of this genericity when $P_p(v)$ and $Q_q(v)$ holds at the same time.

When this analysis is applied to *without* + POSS-*ing* in the previous example (18), it may have the implicature that generally for a player to win, his teammate should support him (23a); or that normally when Clay plays, George supports him (23b); other implicatures are also possible depending on the context.

- (23) a. GEN(x, y)[PLAYER(x) \wedge TEAMMATE(x, y) \wedge WIN(x);
SUPPORT(y, x)]
b. GEN(x, y)[$x = \text{clay} \wedge y = \text{george} \wedge \text{PLAY}(x)$;SUPPORT(y, x)]

I follow Zielege (2020) in assuming that the implication involved here is a conventional implicature: it is not a presupposition because its failure does not invalidate the assertion, and it is not a conversational implicature because it is triggered by the word *without* and is hard to cancel. *With*, of course, lacks this implicature.

3.3. The landscape of sentential adverbials

When discussing sentential adverbials, a large part of the data is *with(out)* + ACC-*ing*. Among the 425 tokens of *with(out)* + ACC-*ing* in my collection, there are 7 in which *with* is selected, making them instances of typical ACC-*ing*. Below are two examples:

- (24) a. But she has come to terms *with Britain belonging to the European Community* and is likely to back the introduction of proportional representation. (BNC)
b. A neat passage of midfield play involving Russell, Cunningham and Tony Shepherd end *with Davidson making an incisive run*. (BNC)

With is sometimes ambiguous between the marker of augmented absolute

and a comitative preposition. One reading of (25a), as illustrated by (25b), is an absolute depicting an accompanying circumstance. The other one (25c) shows a comitative reading in which the headmaster stood with Jim, while the *-ing* form serves as a free adjunct depicting the state of the headmaster.

- (25) a. The headmaster stood at the front of the class *with Jim looking rather embarrassed and announced*. (BNC)
 b. The headmaster stood at the front of the class, with Jim looking rather embarrassed and announced.
 c. The headmaster stood at the front of the class with Jim, looking rather embarrassed and announced.

The lack of commas contributes to the ambiguity of (25), but also suggests a closer relation between the PP and the phrase it is adjunct to.

In the absolute reading (25b), it is understood that Jim looked embarrassed while the headmaster stood at the front of the class; the two situations hold at the same time. The basic reading of *with(out)*-PPs as sentential modifiers is, again, a temporal overlap:

- (26) a. $\llbracket \text{without} \rrbracket = \lambda P \lambda e_k \lambda t [P(e_k) \wedge \neg \exists e [\mathbf{R}(e, e_k) \wedge \tau(e) \circ t]]$
 b. $\llbracket \text{with} \rrbracket = \lambda P \lambda e_k \lambda t [P(e_k) \wedge \exists e [\mathbf{R}(e, e_k) \wedge \tau(e) \circ t]]$

The main clause, after tense is applied, is seen as a temporal abstract. *With(out)* takes an event kind description and serves as an adjunct to the main clause: there is no instantiation of the gerund event kind that overlaps the temporal trace of the main clause in the case of *without*, and there is one for *with*.

However, sentential adverbials stand in various relations to the main clause, and studies abound on this topic. It is necessary to see if *without* + POSS-*ing* expresses the same relations as *with(out)* + ACC-*ing* does, in order to explain why POSS-*ing* does not appear after *with*. I classify my data of *with(out)* + verbal gerunds according to their rhetorical relations with the main clause (Asher & Lascarides, 2003; Reese, Hunter, Asher, Denis, & Baldrige, 2007).

3.3.1. Rhetorical relations

Rhetorical relations are relations between discourse units, which are usually clauses but can also be smaller units. In Asher and Lascarides’s (2003) Segmented Discourse Representation Theory (SDRT), rhetorical relations build up the structure of a discourse, make it coherent and are an important factor in many pragmatic phenomena, such as the possibility for an anaphor to pick up a certain referent. Most importantly for the discussion about *with(out)*-PPs, rhetorical relations have their spatiotemporal consequences: for certain relations to hold between two units, the events expressed in the two units must be in a certain temporal relation.

Rhetorical relations are determined by both linguistic and non-linguistic information such as world knowledge. The following are the relations that are used later in the classification of *with(out)*-PPs. For convenience, I will use “event” to refer to the eventualities or situations expressed by discourse units. Discourse units are represented by α and β .

Background(α, β) holds when β provides background information for α , i.e. the circumstances in which the event in α occurs. For example, [*Clay left home.*] $_{\alpha}$ [*It was raining.*] $_{\beta}$ The *Background* relation can also be represented in the opposite direction: *Background*(β, α) holds for [*It was raining.*] $_{\alpha}$ [*Clay left home.*] $_{\beta}$ It has a temporal consequence that the events have to temporally overlap.

Consequence(α, β) is the relation between the antecedent α and the consequence β of a conditional. For example, [*If George helps Clay*] $_{\alpha}$, [*he will win*] $_{\beta}$.

Continuation(α, β) connects two things that occur in sequence, usually elaborating the same idea. For example: *Clay and his friends were playing.* [*Clay was building a house.*] $_{\alpha}$ [*George was on an adventure.*] $_{\beta}$

Contrast(α, β) holds between two discourse units that make a contrast, and is often signalled by words like *but*. For example: [*Hannah is brave,*] $_{\alpha}$ [*but her best friend is a coward.*] $_{\beta}$

Elaboration(α, β) holds when β provides further information about α . For example: [*Clay won the game.*] $_{\alpha}$ [*He killed the dragon in two minutes.*] $_{\beta}$ It also has a temporal consequence: the event β is part of the

event α .

Narration(α, β) also connects two events that happen in a sequence. Different from *Continuation*, *Narration* has spatiotemporal consequences: the end of event α overlaps the beginning of β in space and time. For example: [*Clay built a portal.*] $_{\alpha}$ [*He jumped in.*] $_{\beta}$

Result(α, β) expresses a causal relation. It is different from *Consequence* in that both parts are asserted. For example: [*Clay pushed George.*] $_{\alpha}$ [*George fell.*] $_{\beta}$

Some rhetorical relations also guarantee that both discourse units share the same topic (Asher & Lascarides, 2003, p. 146): among the ones mentioned above, *Continuation*, *Elaboration* and *Narration*. Finally, sometimes various relations can hold between two discourse units simultaneously, and one unit can have relations with various other units.

3.3.2. *Without* + POSS-ing as sentential adverbial

I briefly look at the use of *without* + POSS-ing as sentential adverbials. In the first type (10a), repeated below, both the matrix clause and the (negation of the) POSS-ing are asserted: there had been an event token in which Alec’s voice became enthusiastic, during which time there was no event token in which Alec realized it.

- (27) a. *Without his realising it*, Alec’s voice had become as enthusiastic as his uncle’s.
 b. Alec’s voice had become as enthusiastic as his uncle’s, *without his realising it*.

Pragmatically, as I have mentioned, the two parts connected by *without* must be related. This is accounted for above using generic incausality because *without* connects two event kind descriptions and the operation occurs within a VP, which is usually not considered a discourse unit. Generic incausality can, of course, still apply to sentential adverbials since it was initially proposed for concessive connectors, but I will now use rhetorical relations because they cover a wider range of discourse phenomena.

In (27a), there is a *Background* relation between the *without*-PP and the main clause, as the PP provides extra information about the main clause; for the same reason, the relation in (27b) is *Elaboration*. In both cases, the two parts share the same topic in the sense of Asher and Lascarides (2003, p. 146), and therefore are relevant.

In the second type of *without* + POSS-*ing* as a sentential modifier, which has a conditional flavor (11), *without*-PP provides the antecedent (if there is not/had not been an instance of the described event kind) and the main clause provides the consequence. The corresponding relation is *Consequence*, and the relevance between the two parts is supported by the conditional itself.

3.3.3. *With(out)* + ACC-*ing* as sentential adverbial

In this classification of *with(out)* + ACC-*ing*, I mainly use the rhetorical relations introduced above, as well as taking inspiration from van de Pol's (2019) classification of absolutes.

First, *with* + ACC-*ing* can be used to introduce a *Continuation* relation when it follows the main clauses. The *with*-PP shares the same topic with the main clause, but the two do not give the impression of being one event; they can be paraphrased with a finite clause connected by *and*. In (28a), both parts introduce the situation of the market; in (28b), the history of the brewery.

- (28) a. But in the US and Japan, Nintendo has become the standard, *with NEC and Sega being the main challengers*. (BNC)
- b. Taylor Walker's Thameside Barley Mow brewery was one of the landmarks of the river east of Tower Bridge. It started out in Stepney as Salmon and Hare in 1730, *with Taylor joining the firm in 1796 and Walker in 1816*. (BNC)

The relation above is not *Narration* because *Narration* carries a spatiotemporal consequence: the end of the first event overlaps the beginning of the second in terms of space and time. In my examples, the two parts may totally coincide in time (28a) or have a larger distance between them

(28b), so *Continuation* is more appropriate.

In the *Elaboration* relation, the second discourse unit provides additional information for the first unit and, in many cases, simply describes a part of it. In the following examples, the *with*-PP specifies what problems emerged (29a), or how the two sides disputed (29b).

- (29) a. Then the problems emerged, *with the players objecting to Sampdoria being brought to west London in the form of pasta diets and double training.* (BNC)
b. Now it's blown up into a dispute between the two, *with each side blaming the other for the lack of progress.* (BNC)

A few examples encode the *Explanation* relation, where the *with*-PP provides a reason why the main clause holds, paraphraseable with a *because* clause: we looked silly because our cover predicted Major's disappearance (30a); the judgment about the aliveness was made because blood was pumping (30b). In both cases, the two connected events are simultaneous and may also encode *Elaboration*.

- (30) a. We may have looked pretty silly last week, *with our cover predicting Major's disappearance*, but at least we were on sale two days before the election. (BNC)
b. One was still obviously alive, *with blood pumping from his leg.* (BNC)

In all the types above, *with*-PP makes a quasi-coordinate (in the case of *Continuation*) or subordinate (*Elaboration* and *Explanation*) to the main clause. They all belong to van de Pol's (2019) "elaboration" category.

The next use of *with* + ACC-*ing* covers what is traditionally known as accompanying circumstances and manner, but these terms are not recognized as rhetorical relations.

When the *with*-PP precedes the main clause, a common relation is *Background*, where the *with*-PP provides information about the situation in which the main clause is asserted. This relation requires that both parts overlap temporally. When a causal relation between the two is more

salient, the main clause may be seen as a *Result*.

- (31) a. *With her heart thumping so hard that her ears were deaf to any other sounds*, Sarah hurled herself down into the dip. (BNC)
- b. *With the general spread of schooling becoming available*, her occupation as a seer waned and Charlotte used her second sight in later years sparingly. (BNC)

What would be traditionally classified as manner may be assigned a *Background* (32a) or *Elaboration* (32b) relation, or in some cases seen as a VP modifier (32c). In (32c), the *with*-PP specifies crucial information about how the procedure is followed, without which the main clause is uninformative.

- (32) a. *With Dalgliesh carrying Anthony* they passed into the cottage. (BNC)
- b. Hold it to the light, *with the eye pointing up and down*, and you should observe that the thickness of the shaft is scalloped away by 50% just above the eye on the rear face. (BNC)
- c. The procedure is followed *with each eye being separately tested*, with and without corrective glasses. (BNC)

There is also a conditional use, represented by only one example in my data collection and demonstrates the *Consequence* relation:

- (33) Her seven-pound claim was one possible reason; another was that, *with an apprentice riding him*, Pendero's odds in the market would lengthen. (BNC)

Stump (1981) analyzes a variety of ways free adjuncts and absolutes may interact with operators in the main clause. Since most of them are not attested in my data collection, I will not focus on those cases.

Finally, temporal relations have been listed among the main uses of free adjuncts and absolutes since the earliest accounts (see Stump 1981,

Chapter I, Section 3), and van de Pol (2019) also points out that some absolutes express temporal relations such as simultaneity, anteriority or posteriority. However, this should not be seen as a function of *with*-PPs in a framework with rhetorical relations, since on the current view, temporal relations are merely the consequence of rhetorical relations. A typical temporal use for van de Pol is the following:

- (34) On a wild and windy day, *with gusts of rain driving into the side of the crematorium*, an Anglican priest waited for the next funeral to commence. (van de Pol, 2019, p. 370)

This use can be fully accounted for using the *Background* relation. Most importantly, one does not locate the main event (the waiting of the Anglican priest) in reference to a given time when gusts of rain fell. Intuitively, one determines that the *with*-PP offers information about the weather, which sets the background for the waiting; as a result, the falling of the rain and the waiting overlap in time.

The following five sentences demonstrate the variety of temporal relations that we can obtain from rhetorical relations. All five are similar in structure and each case implies an event described *ACC-ing*. The time of such an event differs: in (35a), where the *with*-PP is the cause of a *Result*, Alex hit Clay before he fell; the same is (35c), where the *with*-PP is an *Explanation*. In (35b) and (35d), the *with*-PP describes a *Background*, so the time of Alex watching overlaps the time when Clay fell. In (35e), where the *with*-PP is a *Continuation*, *Narration* or *Result*, Alex rushed to help Clay after he fell.

- (35) a. With Alex hitting him in the head, Clay fell.
b. With Alex watching him from behind, Clay fell.
c. Clay fell, with Alex hitting him in the head.
d. Clay fell, with Alex watching from behind.
e. Clay fell, with Alex rushing to help him.

This argument is also in agreement with Portner (1992), who claims that the time of free adjuncts and absolutes are underspecified. The interpre-

tations of *with(out)* can be slightly adjusted, so that the temporal relation *C* is now context-dependent:

- (36) a. $[[\text{without}]] = \lambda P \lambda e_k \lambda t [P(e_k) \wedge \neg \exists e [\mathbf{R}(e, e_k) \wedge C(\tau(e), t)]]$
 b. $[[\text{with}]] = \lambda P \lambda e_k \lambda t [P(e_k) \wedge \exists e [\mathbf{R}(e, e_k) \wedge C(\tau(e), t)]]$

We can now briefly turn our attention to *without* + ACC-*ing*. Most instances can actually be regarded as VP modifiers with a manner interpretation:

- (37) a. [Nisodemus put] “ums” in the flow of words so that he could catch his breath *without anyone having the chance to interrupt him*. (BNC)
 b. These cases may be referred to another agency *without the NSPCC investigating*. (BNC)
 c. Campaign managers solved the problem of her enthusiasm by giving Hillary her own, separate campaign agenda. That way the Clinton message was spread across the nation *without Hillary obviously out-playing the traditional wife function*. (BNC)

A small subset of *without* + ACC-*ing* also demonstrates the variety of rhetorical relations available: as the antecedent of *Consequence* (38a), *Elaboration* only (38b), and both *Elaboration* and *Contrast* (38c).

- (38) a. Because there could be no idea of God in the mind *without God putting it there*, an idea of God was impossible without God’s existence. (BNC)
 b. These were brilliant fun and very relaxing, as the water carried you around the small island, *without you having to do anything*. (BNC)
 c. Lyndon Johnson, by the end of his presidency, had more than half a million troops in Vietnam *without Congress ever having declared war against the North Vietnamese*. (BNC)

Summarizing, *with(out)* + ACC-*ing* may connect to the main clause through

a variety of rhetorical relations. The time of the event described in the *with*-PP may precede, overlap or follow that of the main clause, and I argue that this is not a special type of absolute semantics, but a byproduct of the rhetorical relation. *Without* + ACC-*ing* has more limited uses, which is similar to *without* + POSS-*ing*.

3.4. Two hypotheses

As I have exposed in previous sections, POSS-*ing* is much less compatible with *with* than *without*, while ACC-*ing* is compatible with both and demonstrates a notable variety in absolute constructions. This contrast in distribution is not expected if POSS-*ing* and ACC-*ing* are semantically equivalent. In this section, I introduce two hypotheses that account for the asymmetry: one is pragmatic in nature and is based on the contexts that license POSS-*ing* and ACC-*ing*; the other is semantic and is based on different abilities to be temporally anchored. Both are feasible given the data we have seen so far, but they will be further explored in the next chapters.

3.4.1. Licensing conditions

In my analysis of *without* + POSS-*ing* as VP modifier, a new kind is created by modifying a VP. I assume that *with*, as the positive counterpart of *without*, has the following denotation in combination with POSS-*ing*:

$$(39) \quad \llbracket \text{with} \rrbracket = \lambda P_{k_2} \lambda P_{k_1} \lambda e_{k_3} \exists e_{k_1} \exists e_{k_2} [P_{k_1}(e_{k_1}) \wedge P_{k_2}(e_{k_2}) \wedge \forall e_3 [\mathbf{R}(e_3, e_{k_3}) \rightarrow \exists e_1 [\mathbf{R}(e_1, e_{k_1}) \wedge \exists e_2 [\mathbf{R}(e_2, e_{k_2}) \wedge \tau(e_1) \circ \tau(e_2)]] \wedge \tau(e_3) = \tau(e_1)]]]$$

It creates a complex event type whose instantiation corresponds to the simultaneous instantiation of both event kinds contributed by the modified VP and by the POSS-*ing*. This in principle does not prevent *with* from taking POSS-*ing* as its complement. In fact, the VP modifier use of *with* + ACC-*ing* corresponds well to this interpretation: in (32c), every instan-

tiation of the new event kind is one in which the procedure is followed, and it also entails an event of both eyes being separately tested.

The first hypothesis is that *POSS-ing*, by virtue of being a possessive structure on the surface, has certain licensing conditions that *ACC-ing* does not have. This means that *POSS-ing* cannot be licensed in some contexts where *ACC-ing* can be used felicitously.

The previous example (2b), repeated below, is a clear case of how *POSS-ing* is licensed in the context. The speaker first mentions persuading people, then uses *my persuading them* to make reference to the fact that she is trying to persuade people. If we attempt to use *with* and a verbal gerund expressing the opposite of *my persuading them*, such as *me/my staying silent*, we see that *POSS-ing* is infelicitous because the speaker is not actually staying silent. *ACC-ing*, in contrast, does not need to be supported in the context in the same way.

- (40) I sit here all day trying to persuade people to do the things they ought to have the sense to do {without my persuading them/with me staying silent/#with my staying silent}.

Of course, since most of the examples consist of only one sentence, we cannot see if the previous context supports *POSS-ing*. Let us return to an example of *without* + *POSS-ing* that can be analyzed as a VP modifier. (41a) gives the impression that Darren was expected to know why. Two factors contribute to this intuition: the generic incausality that comes with *without*, and the use of *POSS-ing*. In the counterpart using *with* (41b), there is no generic incausality but there is an expectation that Darren should not know why.

- (41) a. Darren’s mother had been taken to hospital *without Darren’s knowing why*.
b. #Darren’s mother had been taken to hospital *with Darren’s not knowing why*.

The unacceptability of (41b) may be attributed to using *POSS-ing* for unexpected new content. If we assume that the original context felicitously

licenses *Darren’s knowing why*, then it probably does not license the opposite.

The other aspect of this hypothesis is that when *POSS-ing* is correctly licensed, it is intended to be known and is not expected to introduce new information. (41a) asserts that Darren actually did not know why, which is informative because it contradicts the expectation. This suggests that the *with*-PP in (41b) is infelicitous because it should introduce new information, but since *POSS-ing* is intended as known information, it becomes uninformative.

The idea that *with* + *POSS-ing* carries redundant information finds a parallel in the nominal domain. The felicity of a *with*- or *without*-PP as a noun modifier depends on whether the complement is an entailed part of the modified noun:

- | | | |
|------|------------------------|------------------------|
| (42) | a. ?lion with a tail | d. lion without a mane |
| | b. lion without a tail | e. lion with wings |
| | c. lion with a mane | f. ?lion without wings |

As with verbs, the above NPs are seen as kind-level expressions before becoming NumP (Dayal, 2011), where tokens are introduced by singular or plural marking, and further combining with a determiner. Being a lion entails having a tail, so (42a) is infelicitous due to redundancy, except in specific discourse conditions (cf. the maxim of Manner in Grice 1975). (42b) is felicitous though the kind of lion it describes is unnatural. Being a lion does not entail having or not having a mane, so both (42c) and (42d) are informative and therefore felicitous. In (42e) and (42f), the *without*-PP expresses something that is understood, according to world knowledge, to not be a component of the modified noun. Therefore, (42e) describes an uncommon or imaginary kind of lion that has wings, while (42f) is infelicitous except in specific discourse conditions, such as in a discussion where “lions with wings” are relevant.

The reason why *with* + *POSS-ing* should be uninformative is less obvious, because we do not intuitively know if Darren’s mother being sent to the hospital implies Darren should know why. It could be that *POSS-ing* is only licensed in contexts where it is clearly not new information, or

is easily accepted as known by the hearer; or, the use of *POSS-ing* implies that its descriptive content is not new, so it is incompatible with the intention of creating a new event kind that is informative. In contrast, *ACC-ing* is commonly licensed in context where it conveys new information.

Among the interpretations of sentential adverbials, some are intended to introduce new information. The previous examples (28a) and (29b), encoding *Continuation* and *Elaboration* respectively, do not go with *POSS-ing*:

- (43) a. #But in the US and Japan, Nintendo has become the standard, *with NEC and Sega's being the main challengers*.
b. #Now it's blown up into a dispute between the two, *with each side's blaming the other for the lack of progress*.

The intuition is that these rhetorical relations add new content to the discourse, which is in conflict with the context of *POSS-ing* that makes it known information. There are other rhetorical relations that can be built on known content, such as *Background*. I believe that this explains the instance of *with* + *POSS-ing* below, previously mentioned in (6c): the *Background* relation is compatible with its content being known.

- (44) *With Dad's being a builder* he's showing fellows how to get people out if a house is demolished. (BNC)

Another possibility is that the *with-PP* conveys a similar meaning to the instrumental case, interpreted as “taking advantage of the fact that Dad is a builder”. In the other two instances of *with* + *POSS-ing*, (6a) will have a similar interpretation in which the *POSS-ing* represents a source of the problem; in (6b), one can say that the *with-PP* is a modifier of *dialogue* and therefore does not fit as either VP modifier or sentential adverbial.

Many assumptions have been made about *POSS-ing*'s licensing conditions that need to be clarified. First, if *POSS-ing* has its licensing conditions, where do they derive from and what exactly are they? Second, can we find evidence for these licensing conditions if we have access to a bigger context? Third, if *ACC-ing* can be used in all these conditions,

is *ACC-ing* limited to introducing new information or does it also refer to given content?

The answer to the last question seems to be that the use of *ACC-ing* is independent of whether it conveys old or new information. Examples of *without* + *POSS-ing* can be substituted by *ACC-ing*; in fact, *ACC-ing* may even be preferred to *POSS-ing* in contexts where *POSS-ing* is originally used.⁶ This can be expected if *POSS-ing* and *ACC-ing* have different licensing conditions, with *ACC-ing*'s covering those of *POSS-ing*'s. In the next chapter, I will discuss the theoretical background of this hypothesis, and take a close look at the discourse functions of both verbal gerunds.

3.4.2. Temporal anchoring

The second hypothesis that accounts for the *with(out)* asymmetry revolves around the ability of being temporally anchored. In the VP modifier use of *without* (16), when the complex event kind is instantiated, the event kind described by the *without*-PP does not get instantiated. This ensures that both *POSS-ing* and *ACC-ing* are felicitous. In the VP modifier use of *with* (39), whenever the complex event kind is instantiated, the event kind described by the gerund needs to be instantiated too, with a token that stands in some temporal relation to the modified event. I hypothesize that *POSS-ing* cannot be instantiated with token events that are located at arbitrary times, but *ACC-ing* can.

When discussing the semantics of *with(out)*-PPs as sentential adverbials, I argue that the temporal relation between the main clause and the PP is a consequence of the rhetorical relation. *ACC-ing*, being a non-finite

⁶In a pilot study I conducted, I took original sentences from the BNC containing *POSS-ing* or *ACC-ing* and replaced the gerund with a blank space, then offered three options to choose from: *POSS-ing*, *ACC-ing* (one is the original form from the corpus and the other, the corresponding form) and 'both are possible'. Most native speakers showed a strong preference for *ACC-ing*. They preferred *without* + *ACC-ing* even if the original sentence in the corpus used *POSS-ing*; when appearing as complement of *with*, the vast majority agreed that only *ACC-ing* was available.

structure, does not have a tense of its own and can be anchored freely according to its relation with the main clause. Even if *ACC-ing* may take a temporal modifier, I argue that it only restricts potential tokens of the event kind and affects its temporal interpretation through rhetorical relations. In (45), the temporal modifiers forces us to conclude that Alex hit Clay after he fell; therefore the *Continuation* relation holds, and a token event of Alex hitting Clay can be instantiated at the correct time, both after Clay fell and in the afternoon.

- (45) Clay fell this morning, with Alex hitting him in the head in the afternoon.

There could be different reasons why this process is impossible for *POSS-ing*. For example, as I mention in Section 1.1.4, *POSS-ing* may denote a different sort of kinds which is impossible for *with* to instantiate. Now that *ACC-ing* can be freely anchored in time, I propose that *POSS-ing* cannot because it is intrinsically located at some time, even if the time is underspecified. Therefore, it cannot be anchored in time again relative to the main clause.

This hypothesis also finds a pallel in the entity domain. In the VP modifier interpretation, *with* creates a complex event kind which contains two event kinds as parts. Similarly, if we use a *with-PP* to create a new kind in the entity domain, it is often unnatural to have a part identified before identifying the whole. For example in (46a), the kind expression is odd if *the mane* refers to a token established in the discourse.

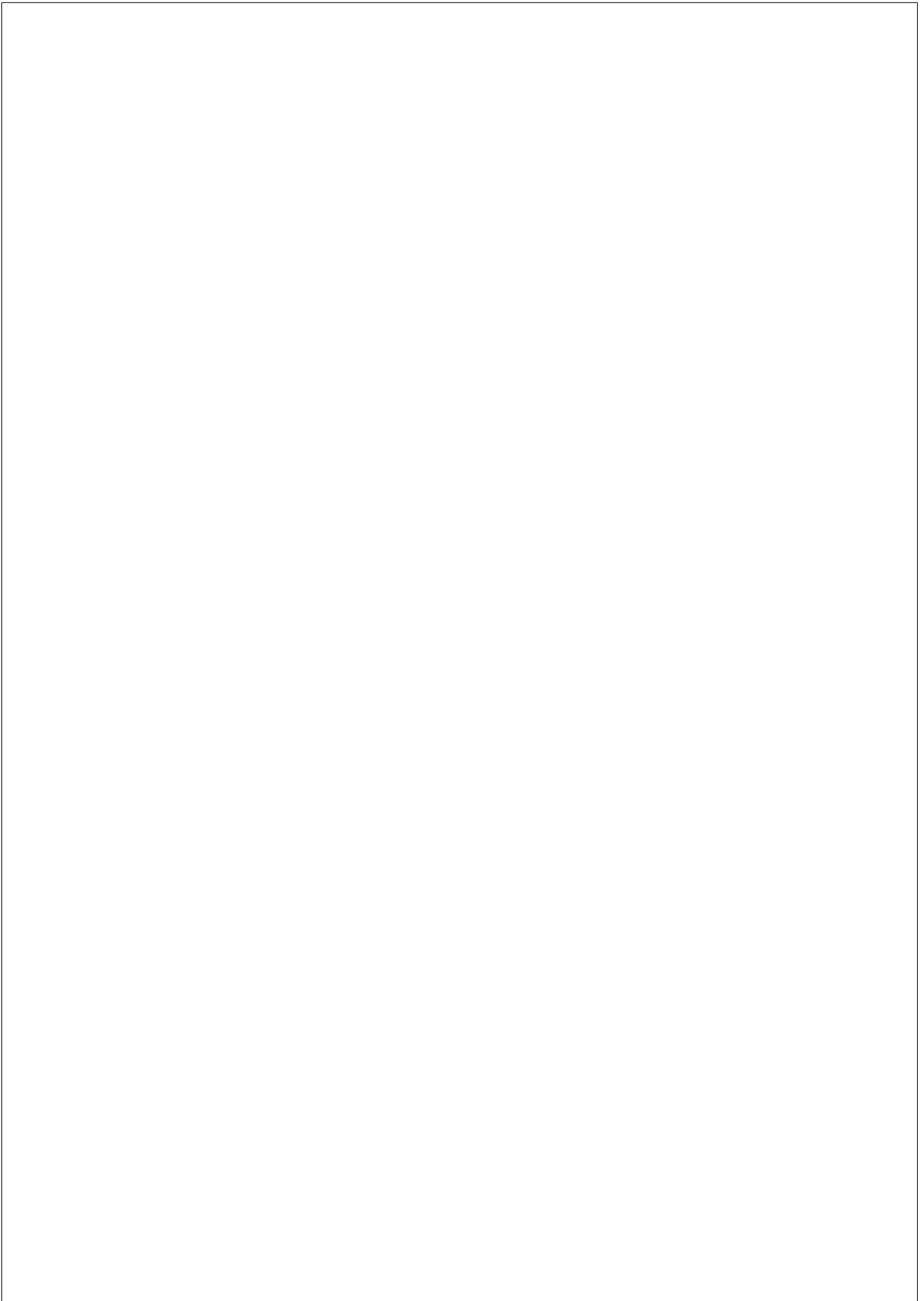
- (46) a. ?lion with the mane
b. lion with that kind of mane

Though time is not involved in the entity domain, it is possible that for a similar reason *with + POSS-ing* is rejected in the formation of the kind. It is also noticed that in the entity domain *with* can take an established kind expression (46b). This is similar to *ACC-ing*: whenever (46b) is instantiated, there is a part of it—a mane—that instantiates “that kind of mane”.

If temporal anchoring is the reason behind the asymmetry between *with* + POSS-*ing* and ACC-*ing*, then the attested examples of *with* + POSS-*ing* must involve a *with* that is different from the one that marks an absolute, so it does not attempt to temporally anchor its complement. As I have mentioned in the previous subsection, (6a-c) can be interpreted without seeing the *with*-PP as a VP modifier or sentential adverbial. (6c) is also compatible with an interpretation of *with* that does not anchor the *with*-PP to the main clause, but use the temporally located POSS-*ing* as a temporal adverbial of the main clause, such as *with* in the following sentence:

(47) With the setting of the sun, the evening came.

This hypothesis will be further developed in Chapter 5, where I argue that POSS-*ing* has temporal properties.



Chapter 4

DISCOURSE FUNCTIONS OF VERBAL GERUNDS

The first hypothesis of the last chapter suggests that *POSS-ing* and *ACC-ing* may have different licensing conditions. This chapter first clarifies this hypothesis by asking what differences we expect, and what semantic features contribute to them. Assuming that both verbal gerunds are nominal structures, they are only differentiated on the surface by the way the NP preceding the gerund is encoded: in the genitive case in *POSS-ing*, and in the accusative (or common) case in *ACC-ing*. As we will see later, whether *POSS-ing* is really a possessive structure is debated in the literature. However, if we hold that syntactic variation is reflected in semantics (in the spirit of Bolinger, 1974) and to some extent pragmatics, then it follows that some differences in discourse function are expected. This chapter aims to test two hypotheses derived from the literature with annotated corpus data: one, assuming that *POSS-ing* is a possessive structure, states that *POSS-ing* tends to be used in contexts with a relevant event token (Grimm & McNally, 2015); the other, based on definiteness (Portner, 1992), hypothesizes that *POSS-ing* tends to be given in the discourse.

Section 4.1 introduces the two hypotheses and their foundations in the literature. In order to test them, this chapter reports a discourse annotation task based on two subsets of 200 instances of verbal gerunds with

a preceding context of up to 250 words, drawn from my *POSS-ing* and *ACC-ing* collections. Section 4.2 discusses previous annotation studies that serve as inspiration for my current task. In Section 4.3, I present my annotation scheme, which is an adaptation of Baumann and Riester (2012). Verbal gerunds present a challenge for the task by containing several event participants and rich descriptive content, so their discourse status is measured by a combination of the event referent/description, the participants and their descriptions. Section 4.4 presents the results. Compared to *ACC-ing*, *POSS-ing* tends to appear more in contexts with token inference, but I show that the analysis of Grimm and McNally (2015) is not sufficient for a considerable proportion of the data showing no token inference. In the annotation of givenness, *POSS-ing* and *ACC-ing* do not show significant difference. Finally, Section 4.5 addresses the effect that verbal gerunds have on the subsequent text, measured by referent manipulability, which is the tendency for a gerund to be picked up by anaphors in its subsequent context.

4.1. Literature and hypotheses

This section presents predictions about the discourse functions of verbal gerunds on the basis of different semantic features: 4.1.1 on the questionable membership of *POSS-ing* among possessive NPs, 4.1.2 on definiteness and familiarity. Two hypotheses are derived from the literature:

- (1) a. **Hypothesis 1:** *POSS-ing* tends to be used in contexts where there is a token corresponding to the event described by the *POSS-ing*. *ACC-ing* does not show such a tendency.
- b. **Hypothesis 2:** In comparison to *ACC-ing*, *POSS-ing* tends to be given in the context.

(1a) comes from Grimm and McNally's (2015) assumption that *POSS-ing*, being a possessive structure, carries an existential import which facilitates the implication of corresponding event tokens; (1b) is derived from Portner's (1992) claim that *POSS-ing* is definite and *ACC-ing*, indefinite.

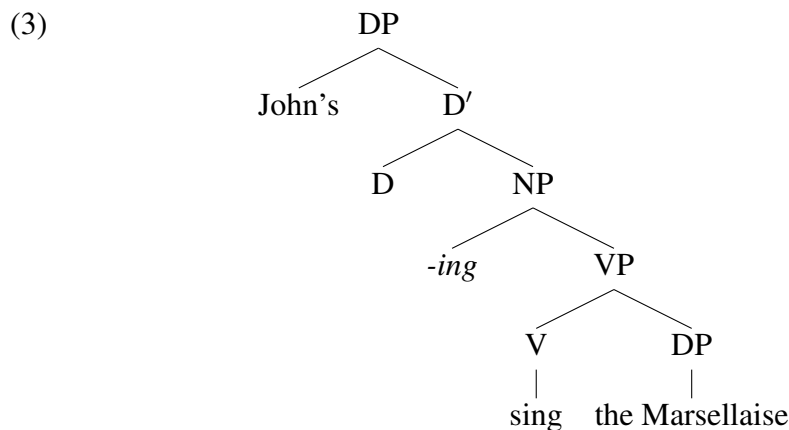
Both will be tested in the discourse annotation task reported in Sections 4.3 and 4.4.

4.1.1. Implications of the possessive

There are different syntactic accounts for the realization of the genitive NP preceding the *-ing* form (Abney, 1987; Pullum, 1991; Pires, 2006; Iordăchioaia, 2020, etc.). Although the genitive NP is indistinguishable on the surface from a prenominal possessor, some researchers hold that it should not be treated as one (De Smet, 2010), for there are syntactic differences between the genitive NP in POSS-*ing* and prototypical possessors. An argument quoted by De Smet is that the gerund cannot be omitted in POSS-*ing* to make null anaphora:

- (2) a. I was amazed at Stacy’s eagerness, and at Morgan’s too.
 b. *I was amazed at Stacy’s being so eager, and at Morgan’s too.
 (Pullum, 1991, p. 770)

For both Abney (1987) and Pullum (1991), this fact is derived from the lack of N’ layer in POSS-*ing*. The following is the syntactic structure of *John’s singing the Marsellaise* according to Abney (1987, p. 223):



Abney claims that the contrast in (2) is also related to POSS-*ing*'s lack of

event reading, which is associated with the N node. As such, it does not necessarily bear on the syntactic status of the genitive NP. Another fact often mentioned is from Webelhuth (1992), who shows that *POSS-ing*, unlike event nouns or nominal gerunds, does not support pied-piping:

- (4) a. I wonder [whose harsh attack on Dukakis/attacking of Dukakis] the Democratic voters resented *t* most.
b. *I wonder [whose harshly attacking Dukakis] the Democratic voters resented *t* most. (Webelhuth, 1992, p. 133)

My search in BNC yielded no instance of *POSS-ing* headed by *whose*, but examples suggesting the possibility of pied-piping can be found in Culicover (1999, p. 97) and Pullum (1991, p. 767).

After presenting the syntactic facts, my focus now shifts to the semantics of the genitive NP. The main semantic argument against treating *POSS-ing* on a par with possessive NPs is the lack of freedom of the possessive relation (Peters & Westerstahl, 2013). In a possessive NP where the noun is non-relational, the relation between possessor and possessee is open to be contextually conditioned: whereas *Clay's cat* by default suggests a owner-pet relation between Clay and the cat, it could as well refer to a cat which Clay treats at work as a vet, or a stray cat that Clay feeds every morning. The possessor of a relational noun is more likely to be associated to the possessee through a specific relation: in the case of *mother*, a mother-child relation. Such possessors need an appropriate context to be interpreted alternatively: if a group of social workers, including Clay, are paired with a group of mothers to provide them with personalized support, then *Clay's mother* could refer to the mother that Clay works with in this situation. In fact, some conclude that the distinction between relational and non-relational nouns in possessive interpretation is unnecessary, as the relation is inferred from world knowledge and discourse context (Bassaganyas-Bars, 2018).

Event nouns, including deverbial nouns and nominal gerunds, are not among the prototypical relational nouns, but they are intrinsically associated with their participants. A genitive NP is by default interpreted as one of the participants: *Clay's murder* is intuitively either a murder commit-

ted by Clay or one in which Clay is killed.¹ The possibility of interpreting the possessor of a nominal gerund as a non-participant is also noted by Kratzer (1996, p. 128): *Maria’s reading of the novel* may, in a specific context, describe a reading event which Maria attended in the audience.

In this regard, *POSS-ing* is unique in that its possessor cannot bear a different relation to the gerund other than the role borne by the syntactic subject of a corresponding verb: in any use of *Maria’s reading the novel*, Maria must be the person who reads the novel.² A common explanation for this lack of freedom is that the possessor originates as the subject of the VP (3) and receives genitive case from D (Abney, 1987).³ As a result, it is also subject to the restrictions placed on prenominal possessors. For example, *that*-clauses are not allowed to be used as the genitive NP in *POSS-ing* even if they can be sentential subjects, and this follows a general ban on *that*-clauses being used as possessors:

- (5) a. That Clay won the game was surprising.
b. *That Clay won the game’s being surprising was remarkable.
c. *That Clay won the game’s reason was inexplicable.

This lack of freedom may also remind us of the hypothesis from Dowty (1989) that verbs and nouns differ in how they take arguments. Dowty argues that verbs take what he calls the ordered argument approach, where the predicate needs to be saturated by an ordered list of arguments associated with fixed thematic roles (6a); (event) nouns take a Neo-Davidsonian approach (Parsons, 1990), where participants are added as adjuncts through thematic roles (6b).

¹Many claims have been made about how different roles can be assigned to the possessor of an event noun according to the type of nominalization and its argument realization, going back to Grimshaw (1990). There are also studies against the view that event nouns have arguments (Newmeyer, 2009; Grimm & McNally, 2013) and I will not explore the topic further.

²Although *ACC-ing* is irrelevant to this discussion, we have to note that the accusative NP preceding the gerund is also obligatorily interpreted as the subject.

³Pullum (1991), rejecting the subject analysis, refer to the genitive NP as a *subjectoid*. In any case, the genitive NP demonstrates properties of both possessor and subject.

- (6) a. SUPPORT(x, y)
 b. SUPPORT(e) \wedge AGENT(x, e) \wedge THEME(y, e)

In this respect, event nouns, including nominal gerunds, do not have a fixed list of arguments, so the genitive NP can be interpreted either as a participant or bearing a different relation. The predicate in POSS-*ing* behaves like a verb with an unsaturated role designated for its subject, which it invariably assigns to the genitive NP. Should the NP be interpreted otherwise, the predicate has to be left with a role unsaturated.

I will leave unanswered the question of whether the lack of freedom is incompatible with a real possessor, and turn to the implications of the possessive relation. I will use the terms “possessor” and “subject” interchangeably to refer to the genitive NP preceding the gerund in POSS-*ing*, and “subject” for the accusative NP in ACC-*ing*. Assuming that syntactic variation should be reflected in semantics (following Bolinger, 1974), the fact that POSS-*ing* has a possessor on the surface and ACC-*ing* does not is expected to lead to semantic distinctions.

For prototypical possessive structures with free interpretation of the possessive relation, Peters and Westerståhl (2013) propose that they all involve quantification over possessed entities. This relation can be either explicit, such as in *most of Clay’s friends*, or implicit, so that *Clay’s friends* either refers to all of Clay’s friends or some of them. Additionally, they all carry Possessive Existential Import (PEI), which means that if the possessive relation holds, then the possessee must exist. In the example (7), PEI makes sure that there must be entities in the extension of *Clay’s friends* (i.e. Clay must have friends) for the sentence to not be trivially true. This is reflected in its interpretation (8) (based on Peters & Westerståhl, 2013, p. 741): the first part of the conjunction guarantees the existence of entities in the extension of *Clay’s friends*.

- (7) None of Clay’s friends is hostile.
 (8) $\exists x[\text{FRIEND}(x) \wedge R(\text{clay}, x)] \wedge \neg \exists x[\text{FRIEND}(x) \wedge R(\text{clay}, x) \wedge \text{HOSTILE}(x)]$

Grimm and McNally (2015) claim that PEI also holds for POSS-*ing* and it

facilitates the inference of an event token corresponding to the descriptive content of the *POSS-ing*. They predict that *POSS-ing* is dispreferred in contexts where there is no corresponding token event, demonstrated by the following minimal pair:

- (9) a. He came to the 49ers in a significant trade with the obvious intent of *him becoming the starting quarterback*. (COCA)
b. ??He came to the 49ers in a significant trade with the obvious intent of *his becoming the starting quarterback*.
(Grimm & McNally, 2015, p. 94)

The original sentence (9a) also shows that *ACC-ing*, unaffected by PEI, has no preference for contexts with corresponding event tokens. This gives us the first hypothesis concerning the use of verbal gerunds in different contexts (1a), repeated below:

- (10) **Hypothesis 1:** *POSS-ing* tends to be used in contexts where there is a token corresponding to the event described by the *POSS-ing*. *ACC-ing* does not show such a tendency.

I will test this hypothesis by looking at a larger amount of data from my collection of verbal gerunds. At this point, there are two things to note regarding Grimm and McNally’s prediction. First, the requirement that a token event exists is not obligatorily satisfied. As we have seen in the last chapter, *without* + *POSS-ing* is commonly used in contexts where there is no relevant token event:⁴

⁴When event nouns with a possessor are put in same context, they also do not imply the existence of any corresponding event tokens:

- (1) Without Alex’s intervention, the project progressed smoothly.

In fact, Peters and Westerstahl (2013, p. 735) exclude all event nominalizations from their generalization for the lack of freedom of the possessive relation. Their examples include *my undergoing surgery for tattoo removal* and *several students’ refusal to budge*, even though these nouns have been shown to accept alternative interpretations of their possessor.

- (11) Without his realising it, Alec’s voice had become as enthusiastic as his uncle’s. (BNC)
 → Alec did not realise it.

The same can be said about *prevent*. When the prevention is positively asserted, its complement is not realized, yet there are many instances of *prevent* taking POSS-*ing*:

- (12) I returned the folders to Mellows during the lunch hour with a note explaining that union instructions prevented my undertaking the work. (BNC)
 → I did not undertake the work.

Second, the original PEI was proposed as a property of the quantification over possessions. Making use of the interpretation (8), there are two ways of interpreting the effect of PEI, illustrated with the example *Clay’s winning the game*:

- (13) a. $\exists e[\cup \text{WINNING}(e) \wedge \text{AG}(\text{clay}, e) \wedge \text{TH}(\iota x \text{GAME}(x), e)]$
 b. $\exists e_k[\cup \text{WINNING}(e_k) \wedge \text{AG}(\text{clay}, e_k) \wedge \text{TH}(\iota x \text{GAME}(x), e_k)]$

(13a) guarantees the existence of token events and corresponds to Grimm and McNally’s prediction. It takes *Clay’s winning the game* as a predicate of event tokens, just as in (8), *Clay’s friends* is treated as a predicate of entities. However, from earlier discussions about the ontology of POSS-*ing*, we know that POSS-*ing* does not offer direct access to event tokens that instantiate the relevant kind, which explains that (14) does not have a reading that quantifies over event tokens of Clay’s wins in the championship:

- (14) *None/Some/All of Clay’s winning the championship was great.

Therefore, besides the fact that event tokens are not guaranteed by the use of POSS-*ing*, (13a) leads to problems with the type of the predicate. We can turn to an alternative where the possessee that is guaranteed to exist by PEI is the event kind (13b), as POSS-*ing* is a description (or

predicate) of event kinds. There are two ways in which we can think of a kind existing (Mueller-Reichau, 2011). The conventional one is for it to be instantiated by a token, hence the existence of an event kind facilitates the inference of an event token (9). The other one accounts for kinds that do not have instances in the actual world. We talk about unicorns as a kind even though they do not exist, because such kinds are useful in identifying and categorizing imaginary things that we commonly talk about in a shared cultural background. Going back to event kinds, they usually carry specific information: the participants are identified only in a certain context, and the action carried out between them is also specific. Event kinds as such cannot be shared on a large scale, but it is possible for them to be shared in a small domain, such as in the discourse context: an event kind that exists is familiar in the discourse. The next subsection revolves around this idea, with Portner’s claim that the definiteness of *POSS-ing* leads to familiarity.

4.1.2. Definiteness and familiarity

With the assumption that *POSS-ing* is definite and *ACC-ing* is indefinite, Portner (1992) accounts for a number of syntactic differences between *POSS-ing* and *ACC-ing* discussed by Horn (1975) and Abney (1987). Portner also claims that due to definiteness, *POSS-ing* carries a presupposition that *ACC-ing* does not share. This presupposition manifests itself in two aspects: factivity and familiarity. Since Portner proposes that verbal gerunds denote propositional entities, factivity is understood as a property of *POSS-ing*⁵ that guarantees the existence of an event token that makes the proposition expressed by the verbal gerund true. This amounts to Grimm and McNally’s (2015) existential import for *POSS-ing*. Portner demonstrates the presupposition of factivity by comparing *POSS-ing* and *ACC-ing* in the object position of non-factive verbs, such as *imagine*:

(15) Charles did not imagine Katy(’s) passing the challenge.

⁵Factivity here is not used in its conventional sense as a property of contexts or predicates, such as in Kiparsky and Kiparsky (1970).

In (15), Portner observes that only *POSS-ing* projects the presupposition that Katy passed the challenge over negation. *POSS-ing* gives the reading that there was an actual situation where Katy passed the challenge and Charles did not imagine that situation; with *ACC-ing* Katy does not need to have passed the challenge in the actual world.

A factive presupposition is also found in Asher (1993), but it is for both *POSS-ing* and *ACC-ing*: the use of a verbal gerund introduces a corresponding token event referent into the main discourse unless the factive presupposition is blocked. *Prevent* (12) for example is among the typical contexts that block factivity even for *POSS-ing*. As I mentioned in Section 1.1.3, verbal gerunds either denote facts or possibilities in Asher (1993): the gerund denotes a fact if the factive presupposition is projected, and denotes a possibility otherwise. However, note that Asher's view does not explain the contrast in (15) because *did not imagine* does not typically block the factive presupposition, and this mechanism does not distinguish between *POSS-ing* and *ACC-ing*.

What is presupposed by *POSS-ing* if a token event does not exist, as in the complement of *prevent*? The other aspect of Portner's presupposition is familiarity, through having a (possibly hypothetical) situation under discussion. That is, *POSS-ing* is used in (12) because the possibility of *my undertaking the work* is under discussion, and this can be accommodated by readers even without seeing the full context. This notion of familiarity that derives from definiteness comes from Heim (1982), who formally defines it in terms of presence in the immediately prior discourse context. Portner (1992, p. 111) likens *POSS-ing* to definite NPs introducing referents through bridging, such as *the next chairman* or *the person who keeps hiding all my papers*. They are used when the context presents an appropriate scenario, such as an organization that typically needs a chairman or several events of papers being hidden. They do not have to refer to concrete individuals, but they make their referents identifiable through relations. I will address bridging in the next subsection. In contrast, *ACC-ing* lacks even the weaker presupposition.

Although Portner's account is based on definiteness, it is worth noticing that neither definiteness nor familiarity necessarily follow from *POSS-*

ing being (superficially) a possessive structure. Regarding definiteness, it is true that possessives are often seen as definite descriptions, but NPs containing an indefinite possessor such as *a neighbor’s cat*, known as “weak definites”, behave like indefinites. They do not require familiarity with the possessee (16a) and appear in existential statements (16b), which is typically impossible for definite descriptions:

- (16) a. I was in the garden this morning, and *a neighbor’s cat* was on our roof.
b. There is *a neighbor’s cat* on our roof.

Barker (2000) claims that the definiteness of a possessive structure is dependent on that of its possessor (also see Poesio, 1994 for related data).⁶ Given that most instances of POSS-*ing* have a definite possessor, this suggests that they can normally be treated as definite descriptions, although instances with an indefinite possessor can also be seen in my data:

- (17) She had drifted off, and had been fast asleep for some hours when the sound of *someone’s keeping their finger pressed on her doorbell* roused her from a deep sleep. (BNC)

With respect to familiarity, it is important to determine what one means by using this term. What Pornter says about (the presupposition of) being a situation under discussion is not very helpful in the analysis of actual data. Instead, I will adopt Barker’s notion of familiarity. First of all, following early works like Heim (1982), familiarity is established as a

⁶Willemse et al. (2009) find multiple possessive NPs with a definite possessor “functionally indefinite”, which means that they can be replaced by indefinite descriptions such as *one of*. In the following example, what was stolen must be *some of* the clothes, jewellery and accessories belong to Elizabeth.

- (i) All her life Ruth has been secretly stealing Elizabeth’s clothes, jewellery and accessories [...]. (Willemse et al., 2009, p. 26)

I believe that by “functionally indefinite” the authors mean that the referents of the expression are not specific. This exemplifies what Peters and Westerståhl (2013) refer to as an implicit existential quantification over possessed entities.

requirement on the felicitous use of definite descriptions. *She* in (18a) is not felicitous because it does not find a previously introduced referent for it to be familiar. However, *his daughter* in (18b) is felicitous – suggesting that the familiarity condition is satisfied – while serving as a first mention, i.e. without a referent in the prior context.

- (18) a. #Stefan started to play the game and she was happy.
b. Stefan started to play the game and his daughter was happy.

The second aspect of Barker's familiarity is that it is defined for definite descriptions themselves (19b), instead of their referents (19a).

- (19) a. **Conventional familiarity:** The referent of a definite description must be familiar.
b. **Barker's (2000) familiarity:** A definite description must be familiar.

This makes it possible for *his daughter* in (18b) to satisfy familiarity without a previously introduced referent. This also suggests that a *POSS-ing* expression can be familiar without depending on a corresponding event (token or type) in the previous context.

Third, Barker claims that a possessive expression is familiar if both the possessor and the possessive relation are salient. For example, one may use the phrase *Clay's mother* when nobody has talked about her previously, because as long as we know Clay and understand the mother-child relation, the expression *Clay's mother* (and how to identify its referent) is familiar; *Clay's waste* cannot be easily used out of the blue unless we know the context in which Clay is related to some waste (maybe by producing or handling it).

To make use of Portner's proposal, we have to assume that *POSS-ing* is a possessive structure, without which the familiarity and its ability of being used as first mention could not be derived. With the lack of freedom of interpretation, the possessive relation in *POSS-ing* is always one between subject and predicate. This relation can be considered always familiar because there is no alternative, but it is also true that an NP cannot

simply serve as subject of any predicate; intuitively, some predications are more plausible than others in a given context.

Since familiarity is a requirement (or a presupposition for Portner) for the felicitous use of definite descriptions, all the instances of *POSS-ing* in the corpus should satisfy familiarity. Considering *ACC-ing* as indefinite, it does not have to be familiar: its subject may be a non-salient entity and it may as well contain an unexpected predication. This gives us the second hypothesis for our discourse annotation task (1b), repeated below:

- (20) **Hypothesis 2:** In comparison to *ACC-ing*, *POSS-ing* tends to be given in the context.

Familiarity will be measured in context with givenness (Prince, 1981), which is the status of referents in the discourse based on the linguistic text. When an NP is used, its referent may be identical to something that the discourse already contains, in which case it is “given”. Its referent may also be completely new to the discourse, in which case we say that the NP introduces a new referent. Apart from “given” and “new”, there is a taxonomy of givenness: for example, the discussion about possessives above suggests that even if a possessive introduces a new referent, it is not treated as completely new because it is anchored to the discourse through the (familiar) possessor and the possessive relation. (1b) hypothesizes that *POSS-ing* tends to refer to given referents or be anchored to the discourse more frequently than *ACC-ing* does.

Finally, the claim that *ACC-ing* is indefinite is only used to explain why it lacks the familiarity presupposition, but indefiniteness has its own implications. For example, indefinites commonly introduce new referents into the discourse, and are infelicitous if their referents are already salient (Barker, 2000). Since *ACC-ing* lacks an overt determiner, its status as indefinite is not at all clear. Therefore, it will be very helpful to examine contexts of actual usage.

4.2. Previous works on discourse annotation

POSS-*ing* and ACC-*ing* have not been studied as the main target of discourse annotation, but there are several studies that serve as a reference in developing my annotation task: the referential status of gerunds has been studied with a focus on specificity; Willemse et al.’s (2009) study on the givenness of possessive constructions highlights the challenge posed by event nominalizations; Spenader’s (2003) and Gentens’s (2016) studies on clausal complements offer examples of annotating phrases with rich descriptive content.

4.2.1. Referential analysis of gerunds

The referential analyses of gerunds by Schachter (1976), Heyvaert (2008) and Maekelberghe (2018) center around the notion of specificity. To begin with, their use of “specificity” should be distinguished from that of Ionin (2006) which conveys both uniqueness of reference and noteworthiness, and their use of the term is compatible with both definite and indefinite descriptions. Specific reference here, used as the opposite of generic reference, means designating an unique instance of the described event instead of the event class. This is comparable to the distinction between token and type reference, but is different in that specific reference does not entail the existence of a token event. The previous example with *prevent* (12) will be treated as non-factive, specific reference since a particular instance of *my undertaking the work* would happen if it had not been prevented (see Condoravdi et al., 2001 for the semantics of *prevent*). At the same time, those with generic reference are necessarily non-factive (Heyvaert, 2008, p. 76).⁷

According to Heyvaert (2008), POSS-*ing* typically has specific ref-

⁷Expressions with generic reference can certainly be factive in the sense of being true: in (21c), *cats chasing wild birds* can refer to a habit of cats, which can be evaluated by world knowledge, or be true in a context with instances of cats found to chase wild birds. Heyvaert’s statement suggests that generic reference cannot be supported by a single episodic event.

erence (21a) by virtue of having a possessive determiner designating a specific subject, which is comparable to definite common NPs. *ACC-ing* also typically shows specific reference (21b) by virtue of having a specific subject: for Heyvaert, this is enough to guarantee a unique, identifiable instance as its referent. Since *ACC-ing* lacks an overt determiner, it is argued that it takes the strategy of proper nouns: it names an identifiable, unique instance without needing a determiner. When *ACC-ing* has a generic subject (21c), the whole gerund does not refer to a single event and therefore has generic reference.

- (21)
- a. In addition he was peculiarly dissatisfied with the outcome of the election, which led to *his losing his own, nominally safe, Conservative seat.* (BNC)
 - b. No time for slip-ups, but the odds must now be on *Oxford avoiding the drop.* (BNC)
 - c. Clay is against *cats chasing wild birds.*

The above analysis is idealized, because having a specific subject does not entail a unique instance of the event described. The following examples, which Portner (1992) uses to illustrate the difference between *ACC-ing* and *POSS-ing* in quantificational readings, suggest that *POSS-ing* does not have to be specific. In (22a), for every instance of *Mary’s shouting at her*, it is usually the case that the next night Joyce dreams about that instance. It clearly quantifies over instances of *Mary’s shouting at her*; moreover, each instance provides a different reference time for the interpretation of *the next night*. (22b) shows *ACC-ing*’s resistance to quantification, and *the next night* must find its reference outside the sentence.

- (22)
- a. Joyce usually dreams the next night about Mary’s shouting at her.
 - b. ??Joyce usually dreams the next night about Mary shouting at her. (Portner, 1992, p. 107)

In a corpus analysis, Maekelberghe (2018) distinguished three layers of

referential status: (superficial) definiteness, specificity and existential status. Consistent with Heyvaert’s theoretical analysis, all the *POSS-ing* instances were found to be specific and *ACC-ing* showed both specific and generic reference. However, the existential status was not reported for *POSS-ing* and *ACC-ing*, as they were underrepresented in the data: only 24 tokens of *ACC-ing* and 10 of *POSS-ing* were included in the verbal gerund data, consisting of 800 instances of almost all bare gerunds. The key insight gained from these studies is how the specific/generic distinction should be distinguished from the existence of token events in the actual world, which is the focus of PEI and Hypothesis 1.

4.2.2. Discourse annotation of possessives

Willemse et al. (2009) conducted a corpus study on the givenness of possessive structures and concluded that they cover a continuum from given to brand new. Five levels of givenness were distinguished.

“Coreferential” is the highest degree of givenness: the target expression refers back to a referent that has been mentioned in the previous discourse. For example, *his cat* is coreferential with *a lovely cat*:

- (23) Clay adopted a lovely cat. His flatmate Nicholas described *his cat* as a perfect pet.

“Text reference” means that the target expression refers back to a previous portion of text. *Clay’s decision* in the following example refers to his decision of adopting a cat, which is stated as a sentence:

- (24) Clay adopted a lovely cat last Tuesday. Although his flatmate Nicholas didn’t like cats, he respected *Clay’s decision*.

“Inferable” covers what is traditionally known as bridging anaphora (Clark, 1977): one can find an element in the previous context that supports the newly introduced referent with some relation. An entity is associated with its parts and other entities standing in a typical relation to it, an eventuality with its participants and result, a scenario with entities fulfilling typical

roles in it. For example, the cat introduced in the first sentence evokes a pet-owner relation (25) and makes *its owner* inferable:

(25) Ryan noticed a beautiful cat. *Its owner* was smiling to him.

Willemse et al. (2009) propose a diagnostic for bridging: the possessive determiner should be replaceable by a definite article in order for the new referent to be inferable. Therefore, given that (26) is felicitous, it can be decided that *its owner* in (25) is inferable. This diagnostic suggests that although the possessive determiner helps identify the antecedent in the context, it is not required: the antecedent itself is salient and the relation it evokes is typical enough to support the bridging anaphora.

(26) Ryan noticed a beautiful cat. *The owner* was smiling to him.

“Anchored” refers to those NPs containing a relational noun (*Clay’s friend*) or expressing alienable possession (*Ryan’s wheelchair*). Unlike inferable NPs, they generally do not work without the possessive determiner anchoring them to their possessor. This is because either the possessor is not salient enough for bridging anaphora (27a), or the possessive relation is not known. For example, *the wheelchair* is unnatural as a first mention if one does not know Ryan was a wheelchair user (27b):

- (27) a. This morning I found *Clay’s cat/#the cat* in my garden.
b. Ryan greeted his friends from the car while his brother unloaded *his wheelchair/?the wheelchair* from the trunk.

Finally, expressions that cannot be anchored to the previous discourse in any of the above ways should be annotated as “new”. The authors summarized their annotation scheme with the following table:

Coreferential	The possessee referent has been mentioned in the preceding discourse and is referred back to
Text reference	The possessee referent is a text referent which is construed on the basis of the preceding discourse
Inferable	The possessee referent is inferable from an associated referent or a scenario in the preceding context
Anchored	The possessee referent is ‘anchored’ to (an) element(s) in the preceding discourse, which reduces its ‘newness’
New	The possessee referent is newly introduced by the possessive NP

Table 4.1: Annotation scheme from Willemse et al. (2009, p. 27)

In their annotated sample of 371 tokens consisting of 185 instances with genitive possessors and 186 with possessive pronouns, 12% were found to be coreferential, 9% supported by text reference, 27% inferable through bridging anaphora and 25% anchored. Finally, 28% involved brand new possessee referents, and most cases in this category were event nominalizations. In the following example, *the system’s launch* was annotated as “new”.

- (28) [about the Turnable Emergency Non-capsizable Triangular System] It can survive punctures in two of its surfaces and still remain afloat. Hunter has produced two prototypes and is in talks with a lifeboat manufacturer that could lead to *the system’s launch* in the spring of next year. (Willemse et al., 2009, p. 45)

The authors deemed this example unsuitable for the “inferable” category because the possessive phrase cannot be replaced by *the launch* and the relation between a system and its launch is not strong enough to license bridging. It is true that the system’s launch fits well in the scenario – with prototypes being produced, one is not surprised to know that the system was being developed and would eventually be launched. This example is not “anchored” either, because *launch* is not typically considered a rela-

tional noun, nor is the anticipated event possessed by the system.

While I will not contest the authors’ judgment that the use of *the system’s launch* does not fit their criterion of “inferable” or “anchored”, this raises two critical questions. First, is it possible for bridging anaphora to license an event-referring expression by anchoring to one of its participants? Studies about types of bridging anaphora generally do not count a bridging relation from participant to events. Particular instances of events are, naturally, not parts of its participants nor intrinsically derivable from them. This can be shown from the following example: even if the word *murderer* implies tokens of murders, it is still hard to license *the murders* through bridging. However, due to this relation being familiar, *his murders* would be classified as anchored.

- (29) The police are looking for a murderer. His murders/??The murders were unbelievably cruel.

Second, recall that Dowty (1989) hypothesizes that nouns do not have ordered argument positions while verbs do, and I have mentioned that this may explain why the preceding NP in verbal gerunds is always interpreted as subject. In this respect, event nouns are less closely anchored to their participants, while verbal gerunds are similar to relational nouns. Does this mean that verbal gerunds are anchored to their subject while event nouns are discourse new even if they are used in the same context and have the same descriptive content? Consider the following examples:

- (30) I watched the best Minecraft player on Twitch yesterday.
- a. His three consecutive wins were fantastic.
 - b. His winning three times in a row was fantastic.
 - c. Him winning three times in a row was fantastic.

All the sentences presuppose that the player won three times in a row and I believe that one should not distinguish between their discourse statuses.

Finally, although Willemse et al. looked at a wide range of possessive structures, they did not take *POSS-ing* into account. Its discourse status is addressed in the current study.

4.2.3. Discourse annotation of propositional content

How do we understand the givenness of a verbal gerund? Seeing them as expressions of event kinds, their referent is an event (kind) which we either already know of from the context, or we do not. An event can also be more or less predictable in a context, but given how difficult it is to measure predictability, presumably we will end up in the same situation as Willemse et al. (2009): an event expression is either coreferential with some event or text, or it is brand new.

The challenge posed by verbal gerunds is that they typically contain rich descriptive content and referential information. Apart from the necessary possessor or subject, many gerunds in my collection involve other participants. They also contain a predicate and possibly adverbials.

Some attempts to annotate the givenness of propositional expressions can be found in studies of clausal complements. Spenader (2003) annotated 139 instances of complements of factive verbs such as *discover* and *realize*, which are traditionally believed to presuppose the truth of their clausal complement. Three levels of givenness were taken into account: “bound presupposition”, where the clause was a repetition or restatement of previous discourse; “abstract object anaphora”, which involved using *this* or *that* instead of a clausal complement; and “accommodated”, which was discourse new. 81 instances were annotated as “accommodated”.

Therefore, Spenader’s annotation also involves a coarse-grained classification of discourse statuses. It serves her purpose of observing how the givenness of propositional complements interacts with information structure. She argues that, for an expression carrying presupposition to communicate new information for the hearer, it needs to either be sufficiently linked to the previous discourse (i.e. fulfilling familiarity) or be the focus of the utterance. In her study, many verbs were found to present their complements as the speaker’s opinion. For example, a speaker may utter *do you know that...* to put forward the idea in the complement for discussion:

- (31) Clay just won the game for the fifth time. Do you know *that this is very important to him*?

This can be a reason why many *that*-clauses bypass the familiarity requirement. Since verbal gerunds (especially *POSS-ing*) appear a lot in non-argument positions, and we assume that *POSS-ing* is a definite description, it is also not likely that they take the path of being presented as focus.

Spenader’s study does not tell us if *that*-clauses still assume some level of familiarity, because the annotation scheme does not measure it. Gentens (2016) makes use of a more fine-grained classification in her annotation of extraposed object clauses. Notably, the scheme includes a level of “inferable” and a level of “new-anchored”. Clauses annotated as “inferable” are linked to the preceding discourse through inferential relationships, such as logical entailments and part-whole relations. For example, (32) is used in a scenario where William was competing against the father, so William winning logically entails the father being beaten.

- (32) She desperately wanted *William to win*, but she could not bear it **that her father should be beaten**. (Gentens, 2016, p. 20)

“New-anchored” means that the content of the target clause is new, but at least some of the words are linked to the previous context. For example, the clause contains an anaphoric NP.

With the addition of these two levels, most *that*-clauses were not counted as brand new in the discourse. In the 237 items annotated by Gentens, only 6 were brand new; 110 were “new-anchored” and 68 were “inferable”. Although the clauses annotated by Spenader and by Gentens are essentially in different contexts, the sharp contrast between Gentens’s results on the one hand, and those from Spenader and Willemse et al. (in relation to event nouns) on the other hand shows how different ways of measuring givenness affect our perception of how propositional content is presented in the discourse. In the next section, I present the annotation scheme used in my task to help us observe how verbal gerunds are used in the context.

4.3. Annotation task

The hypotheses presented at the beginning of this chapter were tested by annotating the preceding context of verbal gerunds for their givenness. In the present study, two random samples of 200 instances each were taken respectively from the POSS-*ing* collection and the subset of “typical ACC-*ing*” from the ACC-*ing* data.⁸ Each gerund came with a preceding context of up to 250 words.

In order to test Hypothesis 1, I checked the existence of token events corresponding to the gerund in each context. For Hypothesis 2, I developed a fine-grained annotation scheme based on Baumann and Riester (2012) to assess the givenness of the gerund from three aspects: the givenness of the event (kind), the referential givenness of subject and object, and the lexical givenness of both participants and the predicate. The intuition is that the more ways we can anchor a referent, the more resources we have to accommodate its existence.

4.3.1. Token inference

As previously discussed, the type/token distinction I employ in this study involves the existence or implication of token events, similar to the “virtual/actual” (Maekelberghe, 2018) or “possibility/fact” distinction (Asher, 1993). Each instance of verbal gerund is annotated as either “type”, “token”, or “token-local” (see below).

A gerund is annotated as “token” when a corresponding event token is known to exist in the discourse, or is strongly implied. In (33a), *you getting there* obviously refers to a specific instance. In (33b), the referent of the gerund “was exceptional”. Because there is no evidence in the context implying it was merely a possibility, and the past tense is used, one can assume that Molla Bostan did reenter the medrese stream.

(33) a. I’ve had time to think it well and truly through in what has

⁸“Typical ACC-*ing*” refers to my ACC-*ing* collection described in Chapter 2, excluding free adjuncts and those following *with(out)*.

been the longest three quarters of an hour of my life between phone call and *you getting here*. (BNC)

- b. [...] it is at least arguable that *Molla Bostan's re-entering the medrese stream* was exceptional. (BNC)

A gerund is also annotated as a “token” if it presents a generalization or idea that is treated as true in the context, or, when the context is neutral about its truth, is true according to world knowledge. In (34), the gerund, although presented as a idea, is taken to be true by the narrator.

- (34) I decided to play along with her idea of *aromatherapy being simply a pleasant way to relax* – indeed, you do not need to be ill to enjoy the benefits of aromatherapy massage. (BNC)

A gerund is annotated as “type” when it is clearly presented as a possibility or idea that is not realized in the context. In (35a), being caught is merely a possibility. In (35b), *Witcher squaring up to Fakrid* is presented as part of the imagination and is not realized in the context.

- (35) a. If the law is to be effective, the criminals must know that the chance of *their being caught* is high, as is the chance of *their being convicted*. (BNC)
- b. The Doctor imagined the likely result of such an action. The thought of *Witcher squaring up to Fakrid* was not a comforting one. (BNC)

There are cases where token events do not occur in the largest discourse, but are quantified over or exist in local contexts. In (36a), it is irrelevant if there are actually instances of texts that have undergone said change being thirstily read, but every instance of a text being changed corresponds to at least one event token of it being thirstily read. In (36b), the bank reacts on tokens of the described event, but the existence of actual tokens is irrelevant – especially with the generic *you*. It is as if a relevant token is accommodated in the local context: if you give its undertaking on its standard forms, a bank will usually be willing to send deeds to you as soon as you have done that. These are annotated as “token-local”.

- (36) a. [...] it is not difficult to think of texts that have been changed into fiery poems, novels and philosophies by *their being thirstily read*: evoked. (BNC)
- b. A bank will usually be willing to send deeds to you upon *your giving its undertaking on its standard forms*. (BNC)

4.3.2. Givenness of the event description

In order to assess the givenness of the gerund as a whole, I adopted the scheme for referential givenness from Baumann and Riester (2012) with adaptations for event descriptions. As the highest degree of givenness, a gerund may be coreferential with an NP in the discourse that refers to an event token. For example, the gerund in (37) finds *her absence from Wimbledon last year* as its antecedent. This is annotated as “token-NP”:

- (37) For Monica Seles, the issue of *her absence from Wimbledon last year* remains the monkey on her back. [...] It is quite obvious now that if there was more to **Monica’s missing Wimbledon in 1991** than the shin splints that were eventually given as the reason, she is not going to tell us. (BNC)

A gerund is annotated as “token-text” when the happening of a corresponding event is stated in the text, such as in (38a), the gerund refers to the person’s actions; or when the truth of the propositional statement corresponding to the gerund can be guaranteed through a portion of text, such as in (38b).

- (38) a. It occurred to him as *he was crashing about in the cupboard among his own old mackintoshes, tennis racquets, gum boots, and broken picture frames* that he might be doing the wrong thing. “You don’t mind **my using the house as if it were my own?**” (BNC)
- b. For them, however, *the involuntariness, vivacity, and coherence of certain ideas* is evidence that they are caused by real things; for Berkeley it means they are real things.

The notion of **our sometimes involuntarily having ideas in coherent series**, continues the New Theory of Vision’s doctrine [...] (BNC)

The annotation “type-NP” means that the possible situation described by the gerund has been presented as an NP. For example, the target phrase in (39) is a repetition of its antecedent in form of an ACC-*ing*.

- (39) “And at the deposit stage, erm Mr, Skelton Village Trust made objection to site D thirty nine? Having previously supported *the site D thirty nine being within the inset*? Do you know when they changed their mind?” “No.” “Do you know why er the Parish Council made no objection to **site D thirty nine being included within the inset** at the deposit plan stage?” (BNC)

A gerund is annotated as “type-text” if it refers to a portion of the previous text, but does not suggest a token event:

- (40) a. *Has it ever been, in your memory, postponed* or cancelled, or do they just carry on regardless? I don’t remember **it being postponed**. (BNC)
b. If you don’t mind, *I’d like to see her before then*. Would you object to **my paying her a visit**? (BNC)

A gerund is “unused-known” when it refers to a event or fact that has not been mentioned in the context but most readers should recognize (such as *Elizabeth II’s passing away*), or when it is strongly implied by the context but is not under discussion. For example, the existence of a nun wearing black robes in (41) implies that her taking of the veil must have happened in the past.

- (41) What was *a nun* doing, hurrying in the opposite direction in the rush hour, flashed into her mind as *the nun* spoke. “Why, Ianthe Broome, of all people!” she exclaimed. “Don’t you remember me?” [...] “I didn’t know about...” Ianthe looked at *the black robes*. “**My taking the veil**?” said the nun, so that she appeared

to be joking. (BNC)

The rest of the uses should be annotated as “unused-unknown”, which is the label that Baumann and Riester (2012) give to definite expressions that are discourse new.⁹ I add a secondary label “implied” to mark those uses of gerunds that are more predictable in the context, notably when a gerund presents a subkind or a particular case of a more general situation in the context. In (42), the text discusses people of a certain status that *went back to medrese teaching* and exceptions. The target phrase is presented as an exception; although the reader will never predict this particular example that was put forward, it is nevertheless not surprising in the context.

- (42) [...] it was not uncommon *for holders of mevleviyet kadiliks to go back to medrese teaching* [...] Analysis of the *exceptions* in Taskoprüzade/Mecdi is difficult [...] it is at least arguable that **Molla Bostan’s re-entering the medrese stream** was exceptional. (BNC)

The annotation of “implied” may suffer from subjectivity. However, it is important to remember that such items are still “unused-unknown” in terms of givenness, and they can be assessed objectively with the givenness of their parts, which I will present in the next subsections.

4.3.3. Referential givenness

In order to see how gerunds anchor to the context through their participants, I annotate the givenness of the subject, the object and the predicate according to the scheme by Baumann and Riester (2012). Their annotation scheme consists of two levels: referential givenness, which is the traditional notion of givenness based on the referent, and lexical givenness, which is based on descriptive content. This subsection presents their scheme of referential givenness with examples from my data collection.

⁹As I will present in the next subsection, the label “new” is reserved for indefinite expressions. I do not want to make assumptions about the (in)definiteness of verbal gerunds, so the label “unused-unknown” is used for both POSS-*ing* and ACC-*ing*.

Referential givenness is applied to the subject and object of each gerund. The subject is always the NP preceding the *-ing* form; the object is by default the direct object of the *-ing* form. When the *-ing* form does not take an NP as direct object, the first NP after the *-ing* is annotated (43a-b); when no such NP can be found, and when the object forms an idiomatic expression together with the predicate (43c), I do not annotate the object.

- (43) a. My being hemmed in by *well-armed stalwarts*, was part of the plan. (BNC)
 b. The fact [...] may be due not (as Ullman suggests) to their failing to pick up *all of the mathematically necessary information in the stimulus* [...]. (BNC)
 c. “My taking *the veil?*” said the nun, so that she appeared to be joking. (BNC)

All the levels of referential givenness are prefixed with “r-” in order to distinguish them from lexical givenness. The highest degree is “r-given”, which means that the target expression finds a coreferential antecedent. Pronouns are typically given (44a) and find NPs as their antecedents. The antecedent can also be a portion of text (44b).

- (44) a. Any deal to keep *the US shops* running is likely to involve **their** being run on a licence or franchise basis. (BNC)
 b. After 22 hours of *distressing, agonising labour*, I was told I was going to need a *Caesarean section*. [...] I mention all this because I know that many women are horrified at the idea of their baby being delivered in **this way**. (BNC)

The level of “r-environment” is only used in direct speech. The referent is not mentioned in the linguistic context, but the interlocutors can easily identify the referent in the external context. In (45), both speaker and hearer could infer that *the house* referred to where they were staying.

- (45) It occurred to him as he was crashing about in the cupboard among his own old mackintoshes, tennis racquets, gum boots, and broken picture frames that he might be doing the wrong

thing. “You don’t mind my using *the house* as if it were my own?” (BNC)

The label “r-bridging” is used for an expression if its referent is not mentioned in the context, but it can be anchored to a salient referent or to the scenario. In (46), *the smaller fish* is introduced through bridging in a fishing scenario.

(46) On some waters you can gain a degree of selectability by using harder and larger diameter baits. [...] This will not stop you catching *the smaller fish* but it may swing the odds in your favour of selecting one or two of the larger fish. (BNC)

The label “r-bridging” is used only for those expressions that do not contain their anchor, so possessive constructions are not included; “r-bridging-contained” is used for expressions that contain their anchors. This is where we find most possessive constructions that Willemse et al. (2009) would annotate as either “bridging” or “anchored”:

(47) I mention all this because I know that many women are horrified at the idea of *their baby* being delivered in this way. (BNC)

The next level of givenness is “r-unused-known”. As I have presented in the givenness of gerunds, this label is for discourse-new items which are generally known, such as famous people and entities (Prince, 1981). Proper nouns that have not been mentioned before are all annotated as “unused-known”, because they are used to identify unique individuals although the reader may not know them.

(48) She phoned up Ben about *Caroline* going out. (BNC)

The label “r-unused-unknown” is used for definite descriptions whose referent is not expected to be known. They are more unpredictable than “r-bridging” and “r-bridging-contained”. In (49), one is not expected to know about what decisions John made.

(49) Fortunately she was unaware how often in future years she would

resent John’s making *decisions which involved both of them* without consulting her. (BNC)

The labels introduced above are all for definite NPs. A label that disregards definiteness is “r-generic”, which is for abstract or generic referring expressions (50a), and also non-referential expressions (50b).

- (50) a. This eliminates the possibility of *the wrong person being updated*, and enables the operator to see if any details are incorrect. (BNC)
- b. [...] the time has got to come at so some stage as to whether you defend a principle of Lincolnshire being *a longer term debt free authority* [...]. (BNC)

Finally, “r-new” is reserved for indefinite NPs that introduce a new referent, such as *another account* in (51):

- (51) John Martyn considered this publication of enough importance to warrant his presenting *another account* to the Royal Society. (BNC)

Referential givenness only concerns the status of the referent; a referent could be fully given but presented in an entirely different way from its antecedent. The other way for an expression to be familiar is through linking its lexical content to the previous discourse, which is modeled by lexical givenness.

4.3.4. Lexical givenness

Lexical givenness measures the familiarity of the descriptive content, regardless of its referential status. The annotation scheme from Baumann and Riester (2012) is proposed for nouns, but I apply it also to the *-ing* predicate in verbal gerunds in order to assess the familiarity of the predication. Pronouns are not annotated due to their lack of descriptive content.

Levels of lexical givenness are marked with a prefix “l-”. The highest level is “l-given-same”, meaning that the same lexical resources are used.

(52) is an example of reusing the predicate *re-enter*.

- (52) [...] kasabat kadis did not normally enter or *re-enter* the medrese stream [...] it is at least arguable that Molla Bostan's **re-entering** the medrese stream was exceptional. (BNC)

The label "l-given-syn" is for the restatement of descriptive content with synonymous words, exemplified by *flog* and *whack*:

- (53) Buster was quite insistent that it was pointless 10 or 12 of us *being flogged*. So the whole Wing and a mustering from the otlter wing on our camp, about 600 boys in all, assembled in the square with Buster in the middle, still determined that it was pointless us all **being whacked**. (BNC)

The label "l-given-super" is for anaphors that are hypernyms of their antecedents. In (54), *attend* is a more general term to describe appearing before the committee and giving evidence.

- (54) Lord Young has offered to *give evidence* to the Public Accounts Committee, which usually takes evidence from civil servants only. Mr Robert Sheldon, chairman of the committee, has said the committee might consider him **attending**. (BNC)

The levels below are not considered "given" but only "accessible", because the lexical content of the target expression is not entailed by its antecedent. The label "l-accessible-sub" is used when the target phrase is a hyponym of a previous word. In (55), *industrial tribunal* is a subkind of *tribunal*:

- (55) A real difficulty here is that legal aid does not extend to representation in the *tribunal*. [...] They will intervene to try to secure a settlement of the claim without its being determined by an **industrial tribunal**. (BNC)

The label "l-accessible-other" is for words that do not have a clear hierarchical relation, but are related in the same scenario. *School* is related to

children in the following example:

- (56) The code does say adverts should not contain material which would encourage *children* [...] Oxford has a near monopoly of complaints over breaches of the voluntary advertising code [...] some have referred to their being too close to **schools**. (BNC)

Finally, completely new lexical resources are marked with “l-new”.

4.4. Results and discussion

In this section, I report the results of the discourse annotation task and draw comparisons with the hypotheses. *POSS-ing* and *ACC-ing* show a difference in token inference, but are similar in their discourse status except that *POSS-ing* almost always has a given subject. I argue that although *POSS-ing* is comparable to a definite description, *ACC-ing*’s behavior in discourse does not support its indefiniteness. Finally, I revisit the pragmatic explanation for the *with(out)* asymmetry in the last chapter.

4.4.1. Token inference

My Hypothesis 1 states that *POSS-ing* tends to be used in contexts where there is a token corresponding to the event described by it, and *ACC-ing* does not show this tendency. Results confirm that *POSS-ing* is used more in contexts that either explicitly assert, imply, or presuppose the existence of a corresponding event token, while *ACC-ing* is more often used to talk about possible situations that are not realized. The difference between *POSS-ing* and *ACC-ing* is significant, $\chi^2(2, N = 400) = 18.875, p < 0.01$.

	Token	Token-local	Type	Total
<i>POSS-ing</i>	114	15	71	200
<i>ACC-ing</i>	78	8	114	200

Table 4.2: Distribution of token inference

Apart from *without* and *prevent*, which cover 13 cases, two types of contexts systematically contribute to “type” uses of POSS-*ing*. One is the complement of nouns that express likelihood, which accounts for 17 instances. These are cases where the gerund is typically presented as old information, either already given or is presupposed to be familiar, in order for the “likelihood” to be anchored to. In (57a), there is no direct reference to the prospect of the aspiration being realized, but one understands from the word *aspiration* that it is desired to be realized. In (57b), it does not make sense to mention a possibility as specific as *the chance of its being a temple of Anaitis* unless this proposal has been put forward (the same could be said if ACC-*ing* is used); and indeed it is given in the previous context.

- (57) a. Aspirations to independence parted from the reality of dependence. For socialists to champion the aspiration when there was no objective possibility of *its being realized* was to be both reactionary and utopian. (BNC)
- b. It could have been, he argued onwards, a fort, or even an early Christian site, or even a pagan place of votive offering, "for there is such a multitude of divinities, to whom it may have been dedicated, that the chance of *its being a temple of Anaitis* is hardly anything. (BNC)

The other is when expressing conditions. Besides the following examples, POSS-*ing* is commonly used to describe conditions in legal contexts. These contexts are compatible with the gerund expressing new information, since the purpose of such sentences is to inform the reader of specific conditions.

- (58) a. Secondly, the integrity of pastoral systems and management processes is contingent upon *their being reflected in all aspects of school management*. (BNC)
- b. Dejean Belizaire, the president of the parliament, subsequently announced on Dec. 9 that Aristide’s return depended on *his accepting one of the national consensus candidates*

for Prime Minister.

(BNC)

With over a third of the *POSS-ing* cases annotated as “type”, this is not enough to support the understanding of PEI in Grimm and McNally (2015): inference of a token event is obviously not a necessity.

4.4.2. Givenness of *POSS-ing* and *ACC-ing*

To assess the discourse givenness of *POSS-ing* and *ACC-ing*, let us start with the general givenness, which is based only on the annotation of the whole event description. In the following table I do not distinguish “given” (marked with “G”) as an NP and “given” in text. Also recall that both “implied” and “unknown” mark information that are discourse new.

	G-Token	G-Type	Known	Implied	Unknown	Total
<i>POSS-ing</i>	32	22	8	41	97	200
<i>ACC-ing</i>	22	28	2	41	107	200

Table 4.3: General givenness of verbal gerunds

The distribution of givenness is very similar for *POSS-ing* and *ACC-ing*, and around 70% of both gerunds are discourse new. Now, we can see if general givenness supports the use of *POSS-ing* in absence of a corresponding event token:

	Token Given	Token New	Local Given	Local New	Type Given	Type New
<i>POSS-ing</i>	41 (36%)	73 (64%)	7 (47%)	8 (53%)	15 (21%)	56 (79%)
<i>ACC-ing</i>	25 (32%)	53 (68%)	2 (25%)	6 (75%)	25 (22%)	89 (78%)

Table 4.4: Token inference and general givenness

The percentages show the distribution between “given” and “new” for each verbal gerund and each level of givenness. *POSS-ing* and *ACC-ing*

still do not differ considerably in their distribution. As the column “Type-Given” shows, only a small number of gerunds without token inference are explicitly supported by discourse givenness.

Among the 56 instances of POSS-*ing* without token inference that are discourse new, 24 were annotated as “implied”, meaning that their use is less surprising by describing a subkind of a previously mentioned kind (which is sometimes the theme of the text). A typical example is the following, found in a passage discussing security measures against theft:

- (59) TOOLS. Have you ever calculated the value of the tools, implements, cycles, etc that are kept in your garage or shed? The danger of *their being stolen* is often not appreciated, and stolen tools are seldom recovered. (BNC)

Theft, or things *being stolen*, is under discussion. *Tools* is newly introduced as a theme, so a reader can see *their being stolen* as familiar even if the predication of *being stolen* has not been previously applied to *tools*. As I mentioned before, the classification of “implied” can be subjective. The intuition is that a verbal gerund is more “given” if more of its parts are given, providing more ways to anchor the new information to the discourse. In (59), both the subject and the predicate of the POSS-*ing* are given, making it easily anchored to the discourse.

We can now see if POSS-*ing* and ACC-*ing* are anchored to the discourse through their components. Starting with the subject, 169 instances of POSS-*ing* and 93 of ACC-*ing* have pronouns as subject, providing at least one anchor to the discourse. This is also a striking contrast in that it shows how the majority of POSS-*ing* instances have a subject that is not only given, but also salient. The following table summarizes the givenness of subject and object in the gerunds. Recall that the NP annotated for “object” may not be in an object position, and some gerunds simply do not contain an NP after the -*ing* form:

Referential givenness	POSS- <i>ing</i> subject	POSS- <i>ing</i> object	ACC- <i>ing</i> subject	ACC- <i>ing</i> object
Given	187	59	139	54
Environment	0	2	0	2
Bridging	2	7	9	14
Bridging-contained	0	18	6	12
Unused-known	5	5	20	11
Unused-unknown	0	12	2	8
Generic	6	46	20	31
New	0	12	4	16
Total	200	161	200	148

Table 4.5: Referential givenness of the subject of POSS-*ing* and ACC-*ing*

Notably, POSS-*ing* subject is always familiar in my sample,¹⁰ supporting the claim that POSS-*ing* can be treated as a definite description. ACC-*ing* subject is more diverse, bringing in more proper nouns that do not appear in the immediate context and non-specific indefinite phrases that I annotated as “generic”. The givenness of object is similar between POSS-*ing* and ACC-*ing*.

The following table shows the lexical givenness of different components of POSS-*ing* and ACC-*ing*. Pronouns, demonstratives and words like *everyone* among NPs, and *do*, *have* and *be* among predicates were not annotated for lexical givenness because they lack lexical content.

¹⁰All the POSS-*ing* subjects annotated as “r-unused-known” are proper nouns.

Lexical givenness	Given	Accessible	New	Total
POSS- <i>ing</i> subject	22	2	6	30
POSS- <i>ing</i> object	45	11	73	129
POSS- <i>ing</i> predicate	57	16	110	183
ACC- <i>ing</i> subject	58	9	37	104
ACC- <i>ing</i> object	45	18	61	124
ACC- <i>ing</i> predicate	61	24	103	188

Table 4.6: Lexical givenness of POSS-*ing* and ACC-*ing*

Again, apart from the fact that POSS-*ing* subject tends to be pronouns and therefore not annotated for lexical givenness, the two gerunds are very similar. Now we can see if those POSS-*ing* cases annotated as discourse new are anchored through their components. Among 137 discourse new instances of POSS-*ing*, 127 have a “r-given” subject, and among the remaining 10 cases only 4 are lexically new. Since POSS-*ing* subjects are all familiar in some way, I now turn to their objects and predicates.

Among the same 137 instances of POSS-*ing* annotated as discourse new, 117 have an annotated object and 20 do not. Among the 117 cases with an annotated object, there are 64 cases of “l-new” object that is at the same time not “r-given”, which means that their object is at least partially new: new lexical content is used to introduce a referent that is not fully given. 47 instances of the 64 cases also have a *-ing* form either annotated as “l-new” or without lexical content; in the latter case, their givenness is represented by the object, so the verbal gerund is considered new.

Among the 20 cases without an object, 15 express new information through the predicate. The figure below illustrates the distribution.

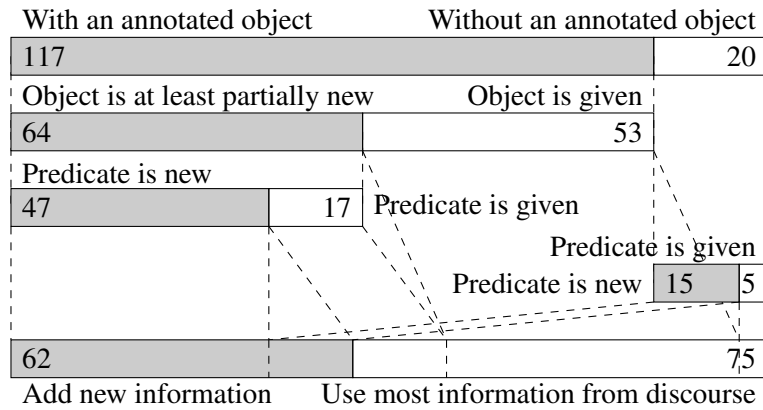


Figure 4.1: Anchoring of POSS-ing through object and predicate

In sum, among the 137 instances of POSS-ing annotated as discourse new, 75 (55%) draw most referential or lexical resources from the discourse (having a given object or verb), only 62 (45%) introducing new information, among them 19 do not come with a token inference. Therefore, at least 9.5% of the POSS-ing sample is not supported by either a token inference or a link to the discourse through its object or verb, relying only on the subject.

To compare the distribution of POSS-ing with ACC-ing, my annotation finds 148 instances of ACC-ing that are discourse new. Among them, 116 have an annotated object and 32 do not. 53 have an object that is at least partially new; among them 32 have a verb that is also lexically new. Among the 32 cases without an annotated object, 23 have an lexically new -ing form. This means that 93 out of 148 instances (63%) of ACC-ing draw referential or lexical information from the context for their object or predicate, while 55 cases (37%) are totally new except for their subject. The figure below shows how ACC-ing distributes according to how it anchors to the discourse through object and verb:

With an annotated object		Without an annotated object	
116			32
Object is at least partially new		Object is given	
53			63
Predicate is new		Predicate is given	
32	21		
		Predicate is given	
		Predicate is new	23
			9
55			93
Add new information		Use most information from discourse	

Figure 4.2: Anchoring of ACC-*ing* through object and predicate

Now, what can we say about Hypothesis 2 and Portner’s proposal based on definiteness? Apart from POSS-*ing* always having a familiar subject, which we could relate to the fact that it is a possessive structure on the surface, POSS-*ing* and ACC-*ing* do not differ considerably in their discourse status. Interestingly, when the verbal gerund as a whole is discourse new, there are even more instances of ACC-*ing* drawing information from the context than POSS-*ing*. One may assume that the possessive relation in POSS-*ing* is stronger than the predication relation in ACC-*ing*, so POSS-*ing* can be more firmly anchored to the context than ACC-*ing* when the only anchor is the possessor/subject.

A few questions arise from these observations. First, what kind of familiarity is the presupposition of POSS-*ing* based on? Both Barker’s (2000) analysis and my annotation are based on discourse givenness, but an author/speaker may have a target reader/listener in mind which shares more of the context that is not overtly expressed. An analysis based on hearer-newness may find different results.

Second, no matter how we measure givenness, there are instances where POSS-*ing* introduces information that is extremely hard to imagine the hearer sharing, for example:

- (60) Many various-sized painted plaster images are on sale and quite a number with large pieces broken off are being brought back in torn imitation plastic leather bags, only to have it explained that the purchasers probably have not been confessing enough and absolution is only granted by *their completing a 13-page questionnaire* through which they get a special adhesive that breaks all mends. (BNC)

I cannot explain the use of *POSS-ing* here except that it is anchored to *the purchasers* and that it expresses a condition, which is common for *POSS-ing* without token inference, cf. (58).

Third, in contrast to the claim that *ACC-ing* is indefinite, *ACC-ing* has no problem referring to familiar content, making it significantly different from indefinite descriptions, whose referent must not be salient (Heim, 1982; Barker, 2000). Indefinite descriptions do not target old referents even if the same phrase is repeated (see for example Carlson, 1977), so (61a) is felicitous by talking about different lions; kind expressions, proper nouns and definite descriptions do not show this behavior (61b-c).

- (61) a. Some lions are friendly and some lions are aggressive.
b. #Lions are friendly and lions are aggressive.
c. #Justin/the lion is friendly and Justin/the lion is aggressive.

In the previous example (39), it is obvious that every appearance of *site D thirty nine being included within the inset* is about the same proposal. It is possible that the use of *ACC-ing* is simply neutral to familiarity: it may identify with a familiar referent if there is one, thus contributing to discourse coherence; it may also introduce new referents (without surprising the hearer) if necessary. This makes it similar to proper nouns or generic expressions.

A more interesting approach is to claim that *ACC-ing* is non-referential: its descriptive content is simply assembled on the fly, and it is through rules of discourse coherence that a reader decides if each occurrence is about the same idea or entity. With the rich descriptive content and refer-

ential information contained in these gerunds, it is possible that their use is not regulated by the licensing conditions of (in)definite descriptions, but instead by rules of discourse coherence; this is however beyond the scope of this thesis. In Chapter 6, I elaborate on the idea of ACC-*ing* being non-referential and argue that it helps providing a solution to the persistent issue of distinguishing ACC-*ing* from similar structures.

4.4.3. Revisiting the *with/out* asymmetry

In the last chapter, we hypothesize that the incompatibility between *with* and POSS-*ing* may stem from pragmatics. For the VP modifier reading of *with(out)*, I compare *with* + POSS-*ing* to kind expressions taking an uninformative *with*-PP modifier, like #*lions with a tail*. From this chapter, we see that although POSS-*ing* is almost always anchored to the discourse, it can also introduce new information in many occasions, so it should not be difficult to use a POSS-*ing* as a VP modifier which does not cause redundancy. Therefore, the explanation that *with* + POSS-*ing* is ruled out by redundancy is not fully convincing.

I also hypothesize that *without* + POSS-*ing* cannot be replaced by *with* and the opposite of the original POSS-*ing* because a context that licenses the original POSS-*ing* cannot correctly license a new POSS-*ing* expressing the opposite. In this chapter, I do not identify any clear licensing condition for POSS-*ing* apart from the tendency for its possessor to be anchored. However, it is possible that the use of *without* facilitates the inference that the POSS-*ing* event is closely associated with the modified event, accommodating its familiarity. The following example is the original context of an example discussed in the last chapter. One can see that the context does not imply that Darren should know why when things happened to his mother, and never mentions *Darren's knowing why* for lexical givenness:

- (62) Secondary onset day wetting (excluding urinary tract infections) is often due to emotional causes. The child may deliberately wet in various places in the house. An extensive psychiatric inves-

tigation of the family and their relationships is then indicated. Darren, aged 5 years, had been found deliberately passing urine in the corner of his bedroom carpet. His parents had detected a smell in the room over the past few weeks and had noticed a damp patch. His mother had caught him doing it one day and had been extremely angry with him. Darren's mother had recently been diagnosed as diabetic and had a period of several weeks in hospital. She had been very ill and suddenly taken to hospital

- a. without Darren's knowing why.
- b. #with Darren's not knowing why.
- c. #with Darren's being left alone at home.
- d. #with Darren's showing extreme distress.

The last sentence explains why Darren had emotional issues that potentially caused his urinary problem. (62b) contains a negation of the original POSS-*ing* which is no more unexpected in the context than (62a). (62c) also introduces new information and helps explaining why Darren might be dealing with distress.

If it is true that POSS-*ing* is required to be familiar in the context, *without* will be the element that contributes to the inference that makes the POSS-*ing* familiar. As I propose in the last chapter, *without* brings generic incausality, which establishes a relation between the modified VP and the POSS-*ing*, accommodating its familiarity. *With* brings no such inference, so the use of unfamiliar POSS-*ing* is not accommodated.

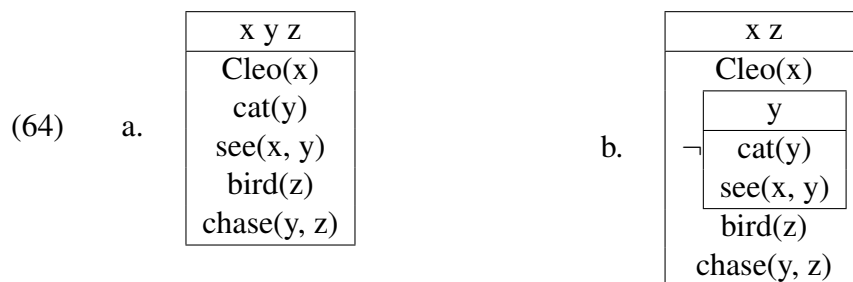
However, *with* + POSS-*ing* is not felicitous even though (62d) reuses information that is well anchored to the context and can be annotated as "implied" in my scheme. The results of my discourse annotation also suggest no requirement for POSS-*ing* to be explicitly familiar in the context. Therefore, the problem of *with* + POSS-*ing* may be better addressed in the realm of semantics.

4.5. Referent manipulability

The previous discussion has focused on the preceding context, which helps reveal how verbal gerunds pick up information and referents from the discourse, or introduce new information into the discourse. The other aspect of their discourse function is how the information and referents associated with the gerunds are used in the context that follows them.

The ability to be picked up by anaphors across a main clause boundary is known as discourse transparency (Farkas & de Swart, 2003). A phrase is discourse transparent if it can be picked up by an anaphor, and is discourse opaque if it cannot. This depends on whether the phrase introduces a discourse referent. I will start with standard assumptions about discourse referents in DRT (Kamp and Reyle, 1993). Referents that are introduced into the main discourse representation structure (DRS) are transparent. A *cat* in (63a) is an indefinite NP that introduces a referent which is a cat that was seen by Cleo, and can be targeted by *it*. A *cat* in (63b) is under the scope of negation, and no referent is introduced into the main DRS; therefore, *it* cannot find a persistent referent as its antecedent and results in an ill-formed DRS. The corresponding DRT representations are (64a) and (64b).

- (63) a. Cleo saw [a cat]_i. It_i was chasing a bird.
 b. #Cleo didn't see [a cat]_i. It_i was chasing a bird.



The following examples from Asher (1993) show that POSS-*ing* can be targeted by anaphors like *it* and *this*:

- (65) a. [John's hitting Fred]_i got everyone in trouble, for it_i led to

- a brawl. It_i also indicated that they must have been pretty mad at each other. (Asher, 1993, p. 226)
- b. [The donkey’s viciously kicking the pig]_j was the outcome of their argument. This_j indicates that they are not getting along at all well. (Adapted from Asher, 1993, p. 245)

Asher (1993) makes no reference to ACC-*ing* in this regard, but he proposes that both POSS-*ing* and ACC-*ing* introduce discourse referents, and claims that they are like proper names in that the referents they introduce are always accessible, i.e. are in the main DRS. This suggests discourse transparency. However, I will avoid this term from now on for two reasons. First, transparency is typically a black-and-white rule but has exceptions; it is sometimes perceived as a spectrum.¹¹ Second, the anaphors for abstract entities, *this*, *that* and *it*, are not good indicators for transparency. Demonstrative pronouns are known to be able to refer to less salient antecedents (Gundel, Hedberg, & Zacharski, 1993). Such words are also flexible with their antecedents, including being able to refer to *to*-infinitives (66), which do not introduce discourse referents in the same way as NPs.

- (66) Everyone wanted Clay [to sign up for the next game]_i, but he decided not to do that/*it*_i.

I will focus instead on referent manipulability, a descriptive term of how likely it is for a phrase or its referent to be referred back to in the following discourse (Hopper & Thompson, 1984). When studying the diachronic changes in discourse functions of English gerunds, Fonteyn et al. (2015) noticed that compared to nominal gerunds and complex NPs, verbal gerunds were significantly less targeted by anaphora, and reported a decrease in the referent manipulability of verbal gerunds from Early Modern English to Late Modern English. They associated the decrease as a consequence of the formal verbalization of verbal gerunds: when they ob-

¹¹Farkas and de Swart (2003) propose that discourse transparency is a matter of degree. An example is incorporated bare singular in Hungarian: it cannot be picked up by explicit pronouns, but for some speakers it can be picked up by *pro*.

tained more verbal characteristics diachronically, they became less likely to occur in salient positions such as the subject position, which is often the target of anaphora. These observations were mainly based on VP-*ing* since the authors did not distinguish between different verbal gerunds, so I believe it is essential to give particular attention to POSS-*ing* and ACC-*ing* making use of my data collection.

The same sets of data as previously selected were used to explore the difference between the referent manipulability of POSS-*ing* and ACC-*ing*. For every instance, I collected a following context of up to 5 sentences and annotated for how the event described in the gerund is represented in the subsequent text.

Both POSS-*ing* and ACC-*ing* were found to be referred back to with *it*, *this* and *that*. This represents the prototypical anaphora to abstract entities:

- (67)
- a. I very much appreciate **your telling me the news so kindly**.
It couldn't have been easy. (BNC)
 - b. More vulnerable than copyhold tenants were leaseholders, particularly when their leases were granted for limited terms such as seven or ten years, with the possibility of **the rent being raised at each renewal**. *This* could be done, and the lord would be in a position to rack-rent [...] (BNC)
 - c. It didn't prevent **it being a huge public success**. Part of *that* was undoubtedly due to Ken. (BNC)

The referent of the gerund may be referred to by a lexical NP. I have identified two instances of POSS-*ing* and three of ACC-*ing*, including the following one:¹²

¹²More potential cases have been identified, but anaphora with lexical NP is sometimes ambiguous. For example, the last use of *this formula* could be an anaphor to *it* (which is the anaphora to *a formula*) or to the ACC-*ing*.

- (1) The best that could be done was to find *a formula* which, compatibly with this, gave something to the minority. *It* took the form of **Baldwin agreeing only to speak for himself and of leaving open the question of an election**. Concentration upon the working out of *this formula* [...] (BNC)

- (68) Raymond Snoddy, in the Pearson owned Financial Times, last Friday also reported on the possibility of **Pearson taking UK Gold**, the entertainment channel set up by Thames and the BBC, to Asia, and of **Longman becoming involved in the educational channel for broadcasting to Asia**. Although Pearson managing director Frank Barlow would not comment on either of *these projects*, Asia is certainly an area of expanding interest for Longman. (BNC)

As the table below shows, the numbers are very low and no significant difference can be seen between the two verbal gerunds.

	<i>it</i>	<i>this</i>	<i>that</i>	lexical NP	Total
POSS- <i>ing</i>	3	1	0	2	6
ACC- <i>ing</i>	3	3	4	3	13

Table 4.7: Anaphors for verbal gerunds

The post-context also helps us observe how verbal gerunds work in the construction of the discourse. When an anaphor cannot be found, the gerund may still be elaborated upon in the subsequent text. For example, in (69) the text continues to explain how the painter expresses his romantic vision:

- (69) His talents may not have been great but his importance lies in **his using them all to express in painting his romantic vision**. This sense of oneness with nature is displayed by the manner in which *he combines the lakes, the mountains and the sky, and fuses them with his “air”*. (BNC)

In many occasions, the gerund itself is not elaborated upon but it stays in the subsequent context as a theme. (70) continues to talk about in what conditions the UDF may join a coalition; (71) elaborates on the thoughts revolving around *Julius being so close* to her.

- (70) [...] on Nov. 9 he reportedly offered to suspend his membership of the Bulgarian Socialist Party (BSP) in exchange for **the UDF’s joining a coalition government**. The UDF continued to insist that the only solution to Bulgaria’s present crisis was *a UDF-led coalition*, and to argue that because of its communist past the BSP lacked the moral credibility to govern. (BNC)
- (71) The thought of **Julius being so close** – just a few rooms away – was more than enough to keep her awake. She had never expected to *be this close to him* again. She certainly hadn’t expected to *find herself sharing a house with him!* (BNC)

31 instances of *POSS-ing* and 26 of *ACC-ing* are found to be followed by an elaboration or to be the theme of the subsequent context. Among them, 21 tokens of *POSS-ing* and 19 of *ACC-ing* are new in the previous context. In these cases, the abruptness of *POSS-ing* introducing new information is alleviated by the content that follows, similar to cataphora.

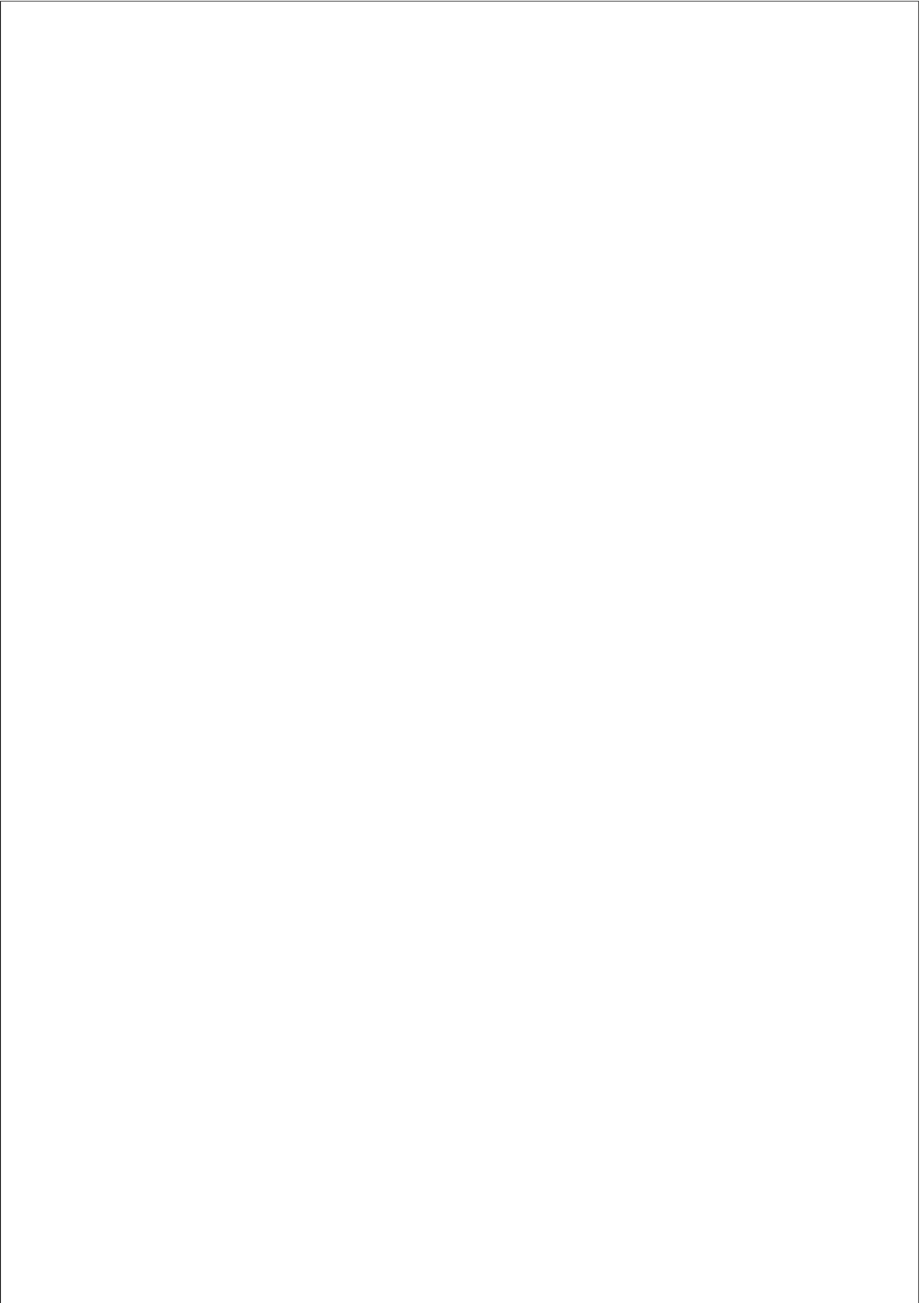
4.6. Chapter summary

This chapter reports a discourse annotation task targeting *POSS-ing* and *ACC-ing* in order to address two hypotheses. The first hypothesis, stating that *POSS-ing* is used more in contexts with token inference, finds support in my data. However, this does not fully support Grimm and McNally’s claim that token inference is facilitated by PEI, because *POSS-ing* can still be used felicitously without token inference in a considerable number of instances. *ACC-ing* is found to appear more without token inference.

For the second hypothesis, which states that *POSS-ing* tends to be given in the context, I have developed an annotation scheme for the givenness of the gerunds. Apart from *POSS-ing* subjects being mostly given, the two verbal gerunds do not show significant differences in their givenness. Especially, *POSS-ing* can introduce information that a typical reader would not be expected to anticipate. Portner’s view that *POSS-ing* is definite is not challenged by my data, but *ACC-ing*’s behavior in the discourse

does not make it qualify as an indefinite description.

POSS-*ing* and ACC-*ing* are also very similar in their ability to be referred back to in the subsequent context. It might be interesting to learn if one verbal gerund is preferred to the other in certain types of contexts, but we cannot know from this task because I was not able to extract all the instances of ACC-*ing* for a certain portion of the corpus. This question can be explored with an experiment where participants choose between POSS-*ing* and ACC-*ing* in different contexts and with different levels of givenness. Considering that ACC-*ing* appears more frequently than POSS-*ing*, ACC-*ing* is likely to be preferred in most contexts.



Chapter 5

POSS-ING AS A KIMIAN STATE

This chapter returns to natural language ontology and to the second hypothesis of Chapter 3: POSS-*ing* cannot be temporally anchored by *with*. I argue that the reason why it cannot be temporally anchored is that it is already located in time. Although one of the crucial properties that has established the denotation of POSS-*ing* as an abstract entity is the claim that it cannot be located in time, this is challenged by corpus data which suggest that POSS-*ing* has a temporal location. Relevant data are presented in Section 5.1, followed by a discussion about how existent accounts of verbal gerunds may cover such data. In Section 5.2, I propose that temporally located POSS-*ing* can be modeled using Kimian states (Maienborn, 2005), based on Kim’s (1976) conceptualization of events as temporally bound property exemplifications.

5.1. POSS-*ing* with temporal location

This section first revisits the data about narrow containers and how they lead to common idea that the denotation of POSS-*ing* cannot have a temporal location. After that, I focus on the attested instances of temporal prepositions taking POSS-*ing*, which I have briefly mentioned in Chapter

2. I argue that the data pose a challenge for existing ontological claims, and therefore require a new analysis.

5.1.1. Against temporal properties

Among the distributional data that are used to distinguish the denotation of *POSS-ing* from eventualities, many are concerned with time and temporal location. Starting from eventive predicates, which are used to locate eventualities in time but do not combine with *POSS-ing*:

- (1)
 - a. *Clay's winning the game took place/occurred at 11 pm.
 - b. Clay's winning of the game/Clay's victory took place/occurred at 11 pm.
 - c. *Clay's cooking the meal began at 9 pm/ended at 9 pm/lasted 10 minutes.
 - d. Clay's cooking of the meal began at 9 pm/ended at 9 pm/lasted 10 minutes.

On closer inspection, eventive predicates in (1a) and (1c) are different. *Happen, occur* and *take place* are used to assert the existence of an event (as the predicate *exist* does not apply to events: **The fall of the Roman Empire existed*), and the spatiotemporal adverbial is added to locate such existence. Since the adverbial is optional, the unacceptability of (1a) is primarily due to the incompatibility between *POSS-ing* and such predicates. The predicates in (1c) make direct reference to the temporal structure of the subject. For anything to *begin, end* or *last*, it should have a duration: a punctual event such as *William's death* cannot felicitously replace the subject in (1c). Therefore, (1c) is not strictly a test for eventualities, but for duration. Meanwhile, *begin* and *end* also locate the durative event in time.

Manner adjectives, many of which make reference to time, also cannot be predicted of *POSS-ing*:

- (2) *Clay's winning the game was fast/slow/gradual/sudden.

All of the adjectives in (2) describe how a dynamic event develops in relation to time. A non-dynamic eventuality, or state, cannot appear with such adjectives either: ?*Clay’s quiet sitting was fast/slow*.

Now, even if we pose strict selectional restrictions on narrow containers, such as *take place*, *happen* and *occur* only take dynamic events, *begin*, *end* and *last* are meaningful only with a durative event, *fast* and *slow* only describe how dynamic events develop, such restrictions will have already ruled out the possibility that *POSS-ing* denote any traditional events or states. However, this does not necessarily mean that *POSS-ing* cannot be located in time. One of the commonly used tests for temporal localization is spatiotemporal modifiers (Maienborn, 2005). *POSS-ing* freely takes such modifiers (3):

(3) Clay’s winning the game yesterday evening in his bedroom

Some uncertainty underlies this test: we need to know the position such adverbials are attached to before claiming that they locate the referent of *POSS-ing*. First, it is known that *POSS-ing* takes adverbs, but not adjectives (4):

(4) Clay’s (*calm/calmly) winning the game (*calm/calmly)

This means that spatiotemporal adverbials can attach as modifiers of *VP-ing*, but in this position they only locate the event variable of *VP-ing*, not the referent of *POSS-ing*. Second, on most analyses where the verbal structure *win the game*, either VP or IP, is immediately under an NP, there is no *N'* level to attach any modifiers above the VP.¹ Therefore, both adjectives and temporal modifiers that attach on the *N'* level are ruled out. However, this does not rule out modifiers that attach higher. If temporal modifiers attach on the NP level, then they should be technically able to co-exist with those on a lower (*VP-ing*) level. Seemingly contradictory or redundant modifiers are possible if they are attached on two different levels, an outer one and an inner one, as (Larson, 2000, p. 4) shows:

¹See Abney’s (1987) analysis of *POSS-ing* in Chapter 4, example (3).

- (5) a. a beautiful beautiful dancer
INTERSECTIVE NON-INTERSECTIVE
b. a Thursday Thursday lecture
DEICTIC GENERIC

(6) demonstrates that this is not possible in *POSS-ing*: locating the temporally modified *POSS-ing* in *this week* does not work, though *yesterday evening* and *this week* are not contradictory most of the time.

- (6) *Clay's winning the game yesterday evening this week

Finally, the outer modifier ascribes a property to the referent and should be paraphraseable with a relative clause: a Thursday Thursday lecture is a Thursday lecture (scheduled on Thursdays) which occurred on Thursday. (3) cannot be paraphrased in a similar way as *Clay's winning the game which was/occurred/took place yesterday evening in his bedroom* simply due to eventive predicates not taking *POSS-ing* as subject. It is also not possible to omit the *VP-ing* and leave the temporal adverbial:

- (7) *Clay's winning the game yesterday evening was as surprising as Alex's/the one last week.

Therefore spatiotemporal modifiers in (3) attach low to *VP-ing*, and (3) must be understood as related to a possible event of Clay winning yesterday evening in his bedroom, instead of locating the referent of *POSS-ing* at a time and place.

Another diagnostic for temporal localization employed by Vendler (1967b) is the incompatibility with temporal prepositions:²

- (8) a. *Everything was quiet until his singing the Marseillaise.
b. *The trouble started after his singing the Marseillaise.
(Vendler, 1967b, p. 139)

Such prepositions describe a temporal order: for (8b) to be true, the event

²The judgments in (8) are Vendler's. In accordance with the corpus data presented below, such examples will be treated as acceptable.

denoted by *the trouble started* should temporally follow the denotation of *his singing the Marseillaise*, regardless of whether the latter is an event or not. The unacceptability of (8) follows if the referent of *POSS-ing* has no temporal location.

5.1.2. Corpus data supporting temporal location

Contra Vendler’s judgment, a variety of temporal prepositions are found to take *POSS-ing* in my data collection. In order to see what kinds of prepositions select verbal gerunds, I classified temporal prepositions according to the type of their complement with the help of the Pattern Dictionary of English Prepositions (PDEP) (Litkowski 2014, based on Quirk, Greenbaum, Leech, and Svartvik 1985). PDEP is a collection of prepositions and their functions.

PDEP Temporal Class (93 senses)

Preposition	Sense	Subclass	Srtype	Supersense	Classed	Count	Pct	NF
\gainst	4(2)	Preceding	EventInFuture		Yes	0	100.0	0.19
\pon	17(8)	SimpleTime	Day	Time	Yes	0	100.0	0.19
\pon	18(8a)	SimpleTime	Occasion	Time	Yes	0	100.0	0.19
about	6(n)	SimpleTime	TimePoint		Yes	2	100.0	89.35
across	1(1)-1	Period	PeriodTraversed	Duration	Yes	4	100.0	21.64
afore	1(1)	Preceding	TimePoint	DeicticTime.RelativeTime	Yes	1	100.0	0.19
after	1(1)	Following	TimePeriod	RelativeTime	Yes	142	100.0	4463.68
after	2(1a)	Period	PeriodRepeated	Frequency	Yes	1	100.0	31.43
after	3(1b)	Following	Hour	ClockTimeCxn	Yes	0	100.0	31.43
after	4(1c)	Period	ThingDeparting		Yes	15	100.0	471.52
against	4(2)	Preceding	EventInFuture		Yes	16	100.0	342.97
agin	4(2)	Preceding	EventInFuture		Yes	0	100.0	0.19

Figure 5.1: Examples of temporal prepositions in PDEP

Each entry includes a parameter *Srtype* for the types of complements that a preposition selects for, and a preposition may have various entries with different *Srtype* values. I identify three classes of temporal prepositions that may interact with *POSS-ing*.

The first class, which I call event-selecting prepositions, is marked with the *Srtype* of “Occasion”. This class includes *on* and *upon*, which

select an eventive expression, but not a description of time:³

- (9) a. on/upon George's arrival
- b. *on/?upon the time of George's arrival

Both *on* and *upon* are attested to take POSS-*ing*:

- (10) a. When the Wilde scandal broke in 1895, Mrs Levenson stood out against public opinion and took him into her home *on his being released on bail*, an act of courage and loyalty for which she has become justly renowned. (BNC)
- b. People from the stations we visited in such areas, or whom we encountered *upon their being transferred to Easton*, felt policing there was not typical and that we were obtaining an unrealistic view. (BNC)

The second class, which I call point-selecting prepositions, has “Time-Point” among their Srtype values. They indicate anteriority or posteriority. Their complement can be either a temporal or an eventuality description, and while the complement may be a durative event, the interpretation of the temporal relation is based on a time point. For example, *before the contest* is understood as before the initial point of the contest, and *after the contest* is about the time following the end point of the contest. Many different expressions in this group, like *before*, *after*, *prior to*, *subsequent to* and *between* are attested to take POSS-*ing*:

- (11) a. First, the procedure for approving the establishment of courses –; *before their being submitted for academic validation by the CNAA* – was administered by HMI through the Regional

³Some prepositions appear in temporal expressions like *on Monday* and *at night*. I consider them fixed phrases and irrelevant to this discussion. *Upon* is occasionally used with explicit time expressions, but this seems to be overlooked by PDEP:

- (1) I believe a cure for aging is a good thing and upon the time the technology comes of hand it should be offered to all [...] (enTenTen20, SketchEngine)

Advisory Councils (RACs), and this procedure was operated in favour of the polytechnics. (BNC)

- b. This concept met resistance in Tehran, particularly as Iraq underlined its position with another offensive just *after Iran's accepting the principle of a cease-fire*. (BNC)
- c. I have to say that I didn't see them in their homes *prior to their being admitted* at all. (BNC)
- d. I didn't see any past... I did see some past papers but it was *subsequent to my setting these exam questions*, right? (BNC)
- e. It must be recognised, however, that as long as the binding of most serial parts is – as at present – contracted out to a commercial bindery, delays incurred in the processing of such items *between their leaving the Library and subsequently returning to it*, will remain outwith the Library's control. (BNC)

The appearance of *after* with POSS-*ing* has also been reported in the diachronic data, such as the following example from COHA⁴ (van de Pol, 2019, p. 93):

- (12) What ailed him that he should prick up his ears and snort after his sniffing the mist (COHA, The shuttle, 1907)

The third class of temporal prepositions, represented by *during* and *throughout*, take complements that are necessarily durative. A non-durative event description is not acceptable: **during George's spotting of his enemy*. I call this class period-selecting prepositions; they have “TimePeriod” in Srtype values and do not have “Timepoint”. *During* and *throughout* are not found to select POSS-*ing* in the corpus. Obviously, negative evidence from the corpus does not mean that they are forbidden from taking POSS-*ing*, but this use, if ever permissible, is very rare.

The examples with temporal prepositions show that the referent of

⁴COHA, 1810?-2009. Corpus of Historical American English, 400m words. Compiled by Mark Davies. <http://corpus.byu.edu/coha/>.

POSS-*ing* patterns like eventualities in having temporal locations. For point-selecting prepositions to be interpreted, they need to either take a temporal expression or have access to the temporal structure of its complement (Condoravdi, 2010). The contrast between (9) and (10) suggests that POSS-*ing* is not coerced as a temporal expression, but has a structure of its own.

Finally, there are other expressions that make reference to the time of an event described by POSS-*ing*, such as *within (time) of*. It is even possible to explicitly talk about its time using *the time of*:

- (13)
- a. I had expected that one or two of the fry might tentatively explore this new hiding place; what in fact happened was that the ENTIRE brood crammed themselves into it *within a minute of my putting it in the tank*. (BNC)
 - b. This we did, for in about an hour and a quarter *from the time of our beginning the ascent*, we found ourselves on the top of this dreadful precipice, and in possession of some very uncommon plants... (BNC)
 - c. Sir Michael Clapham had what he later described as “wild hopes” that the process of delegation would be achieved *within two or three years of his vacating the chairmanship in 1977*. (BNC)

In my POSS-*ing* collection, there are 11 cases of event-selecting prepositions taking POSS-*ing*, 14 cases of point-selecting prepositions and 17 cases of other temporal reference to POSS-*ing*, including 3 instances of *the time of*. These instances account for 3% of my POSS-*ing* collection. The denotation of POSS-*ing* must have some kind of temporal location in order for them to be interpreted, which means they cannot be Vendlerian facts. These data show POSS-*ing* with a mixed behavior: it refers to an entity more abstract than eventualities, but shares with them the ability to be located in time.

5.1.3. Challenge to existent accounts

The use of temporal prepositions with *POSS-ing* has not been discussed in the literature. Starting from Vendler (1967b), most accounts of *POSS-ing* are intended to model its denotation as an abstract object without any temporal properties. For example, a state of affairs according to Zucchi (1993, p. 213) is the entity counterpart of a proposition with which it shares its descriptive content: *Clay’s winning the game* is the entity equivalent of the tenseless proposition *Clay win the game* which in turn is the set of situations that contain as a subpart an event of Clay winning the game. Such situations may vary in size and time, and it is unclear how a state of affairs may obtain a time in the process.

On the account of Grimm and McNally (2015), the parsimonious ontology of the event realm only consists of event kinds and tokens. No matter which conceptualization of kinds we follow, event kinds are analogous to kinds in the nominal domain and not located in space or time. On their analysis, the fact reading of *POSS-ing* is obtained by an event token that exists which realizes the given kind. (14a) gives a default reading in which Ryan did take aim at Charles, but that is not part of the immediate interpretation (14b), which merely asserts that the event kind described by *Ryan’s taking aim at Charles* surprised Oli.⁵

- (14) a. Ryan’s taking aim at Charles surprised Oli.
 b. $\lambda t \exists e_{k2}, e_2 [\cup \text{SURPRISE}(e_{k2}) \wedge \text{STIMUL}(\cap (\lambda e_{k1} [\cup \text{TAKING-AIM}(e_{k1}) \wedge \text{AG}(\text{ryan}, e_{k1}) \wedge \text{AT}(\text{charles}, e_{k1})])), e_{k2}) \wedge \text{EXP}(\text{oli}, e_{k2}) \wedge \mathbf{R}(e_2, e_{k2}) \wedge \tau(e_2) = t \wedge t < \text{now}]$

The existence of a token event corresponding to the *POSS-ing* is not entailed by (14b); the event referent may come through bridging. What is important is that the matrix predicate does not apply directly to an event token. In the case of temporal prepositions, this leads to (15b), which

⁵Example (14b) follows Grimm and McNally (2015) in assuming that the matrix event starts as an event kind description and is instantiated by the past tense. Chierchia’s (1998) \cap operator turns the event kind description into its entity correlate to serve as an argument.

asserts that an event token is in an AFTER relation to an event kind description:

- (15) a. Oli escaped after Ryan’s taking aim at Charles.
 b. $\lambda t \exists e_{k2}, e_2 [\cup \text{ESCAPE}(e_{k2}) \wedge \text{AG}(\text{oli}, e_{k2}) \wedge \mathbf{R}(e_2, e_{k2}) \wedge \text{AFTER}(e_2, \cap (\lambda e_{k1} [\cup \text{TAKING-AIM}(e_{k1}) \wedge \text{AT}(\text{charles}, e_{k1}) \wedge \text{AG}(\text{ryan}, e_{k1})])) \wedge \tau(e_2) = t \wedge t < \text{now}]$

The AFTER relation cannot be interpreted with the current conceptualization of event kind descriptions. It can be interpreted under two conditions: POSS-*ing* is not turn into an object by the \cap operator but feeds an event kind variable to the temporal preposition, and the preposition contains a realization relation, so that we obtain an event token where Ryan took aim at Charles. Grimm and McNally (2015) take a similar approach in their treatment of free adjuncts:

- (16) a. Mose smiled, blushing.
 b. $\text{Adv}_{\text{temp}}: \lambda P_{\langle e_k, t \rangle} \lambda Q_{\langle i, t \rangle} \lambda t \exists t', e, e_k [\mathbf{Adv}(t, t') \wedge P(e_k) \wedge \mathbf{R}(e, e_k) \wedge \tau(e) = t' \wedge Q(t)]$
 c. $[\text{AdvP } \emptyset_{[\text{Adv}_{\text{temp}}]} [\text{VP blushing}]]: \lambda Q_{\langle i, t \rangle} \lambda t \exists t', e, e_k [\mathbf{Simul}(t, t') \wedge \cup \text{BLUSHING}(e_k) \wedge \mathbf{R}(e, e_k) \wedge \tau(e) = t' \wedge Q(t)]$
 d. $[_S \text{ Mose smiled}]: \lambda t \exists e', e'_k [t < \text{now} \wedge \cup \text{SMILE}(e'_k) \wedge \text{AG}(\text{mose}, e'_k) \wedge \mathbf{R}(e', e'_k) \wedge \tau(e') = t]$
 e. $[_S \text{ Mose smiled}, [\text{AdvP blushing}]]: \lambda t \exists t', e, e_k [\mathbf{Simul}(t, t') \wedge \cup \text{BLUSHING}(e_k) \wedge \mathbf{R}(e, e_k) \wedge \tau(e) = t' \wedge \exists e', e'_k [t < \text{now} \wedge \cup \text{SMILE}(e'_k) \wedge \text{AG}(\text{mose}, e'_k) \wedge \mathbf{R}(e', e'_k) \wedge \tau(e') = t]]$
 (Grimm & McNally, 2015, p. 97, with minor corrections)

In the derivation above, the free adjunct *blushing* is treated as an intersective modifier of the matrix clause. An implicit temporal adverb (16b) takes a matrix clause Q which is a property of time and an event kind description P . It contains a realization relation: the event kind is instantiated by a token, whose temporal trace stands in an underspecified relation to the matrix time. This relation is resolved to simultaneity in free adjuncts, represented by **Simul** in (16c). Therefore, it is asserted in (16e)

that there is a token event of Mose blushing that happens simultaneously with the matrix event of Mose smiling.

Applying this treatment to temporal prepositions, we have the following interpretation for *after*. Unlike the implicit temporal adverbial (16b), *after* specifies a temporal relation between the time of the main clause and that of an event token that instantiates the kind described by POSS-*ing*:

- (17) a. after: $\lambda P \lambda Q_{\langle i, t \rangle} \lambda t \exists t', e, e_k [P(e_k) \wedge \mathbf{R}(e, e_k) \wedge \tau(e) = t' \wedge t' < t \wedge Q(t)]$
 b. after Ryan’s taking aim at Charles:
 $\lambda Q_{\langle i, t \rangle} \lambda t \exists t', e, e_k [\cup \text{TAKING-AIM}(e_k) \wedge \text{AG}(e_k, \text{ryan}) \wedge \text{AT}(\text{charles}, e_k) \wedge \mathbf{R}(e, e_k) \wedge \tau(e) = t' \wedge t' < t \wedge Q(t)]$

This treatment supposes a special status for temporal prepositions, which makes them different from other narrow containers. However, as the authors (Grimm & McNally, 2015, p. 91) have noticed, POSS-*ing* does not serve as free adjunct because it lacks “an unbound event-kind variable that can be temporally anchored as the adverbial requires”:

- (18) *Mose smiled, his blushing.

That is to say, assuming that POSS-*ing* has the same denotation as an entity correlate of an event kind description (15b) in other contexts, the realization relation in temporal adverbials/prepositions should not be able to instantiate the event kind variable in POSS-*ing*. In this chapter, I will advocate a view in which properties of POSS-*ing*, rather than prepositions contribute to the possibility of their co-occurrence, so that both POSS-*ing* and the prepositions are interpreted consistently. The treatment in (17b) is essentially fitted for VP-*ing*, which is perfectly acceptable, and ACC-*ing*, whose rare co-occurrence with temporal preposition will be discussed in the next chapter:

- (19) Oli escaped after (?Ryan/?him) taking aim at Charles.

Turning to a different approach to POSS-*ing*, Portner (1992) proposes that POSS-*ing* denotes sets of minimal situations (see Section 1.1.2). Since he

makes use of a temporal ordering among situations (Portner, 1992, p. 37), it is possible to talk about the precedence relation between situations. In the analysis of attitude predicates like *celebrate*, *commemorate* and *regret*, which denote “an attitude towards an event that is over and done with” (ibid. p. 259) and enable a gerund to be interpreted “perfectively”, the author introduces a point-of-view relation between matrix and gerund situations. In short, *I celebrated my building the house* is true of a situation s' iff s'' has the characteristics of a my-building-a-house situation from the point of view of s' and I celebrate s'' in s' .⁶ It would be a meaning postulate of the predicate *celebrate* that the celebration situation s' follows the entirety of the celebrated one s'' . Therefore, the house-building event is a complete one, and a temporal relation between the matrix event and the POSS-*ing* event is established implicitly.

This solution is transferrable to temporal prepositions, the only difference being that the temporal relation is now encoded explicitly in the preposition. Here is how *after* and a simplified version of (11b) may be interpreted according to Portner’s proposal, following closely the original notation (ibid. p. 264). *After* denotes a relation between the denotation of its POSS-*ing* complement x_1 and the matrix proposition p . Expressions are interpreted in relation to the following parameters (ibid. pp. 57 and 262): a model M ; a situation of utterance u including a time of utterance, a specification of speaker and addressee and other information; a context of utterance C , which is a context in the sense of Heim (1982); a reference situation r ; a variable assignment g ; the evaluation situation s .

- (20) a. $\llbracket \text{after}(x_1)(p) \rrbracket^{M,u,C,r,g,s}$ = a function $f \in D_{\langle s,t \rangle}$ such that, for any situation s' , $f(s') = 1$ iff p is true in s' & $g(x_1)$ precedes s'
- b. $\llbracket \text{An offensive occurred after Iran's accepting the principle.} \rrbracket^{M,u,C,r,g,s}$
 = that function $f \in D_{\langle s,t \rangle}$ such that, for any situation s' ,
 $f(s') = 1$ iff $\llbracket \text{Iran's-accepting-the-principle}[x_1] \rrbracket^{M,u,C,s',g,s}$
 = 1 & $\llbracket \text{after}(x_1)(\text{an offensive occurred}) \rrbracket^{M,u,C,r,g,s}(s') = 1$
 = (...) iff $\llbracket \text{Iran's accepting the principle} \rrbracket^{M,u,C,s',g,s}(g(x_1))$

⁶Readers should refer to Portner (1992, p. 264) for details of the original notation.

= 1 & an offensive occurs in s' & s' is past & $g(x_1)$ precedes s'
 = (...) iff the evaluation situation of *Iran's accepting the principle* s'' has the characteristics of an Iran-accepting-the-principle situation from the point of view of s' and an offensive occurs in s' & s' is past & s'' precedes s'

The problem is how a situation with “the characteristics of” a POSS-*ing* manages to have its temporal location. As I mention in Section 1.1.2, Portner makes a distinction between minimal situations, which lack concrete properties such as time or manner, and concrete situation, which are basically events. This explains why POSS-*ing*, as sets of minimal situations, does not go with narrow containers. Here, for a situation deriving from a POSS-*ing* to stand in a temporal relation, the distinction between minimal and concrete situations will be blurred, unless we stipulate that a situation has “the characteristics of” a POSS-*ing* if it is a concrete extension of one of the minimal situations that constitute the POSS-*ing*.

The only known analysis of verbal gerunds that makes reference to time is Hamm and van Lambalgen (2002). The distribution of English nominals is accounted for in a system of event calculus, with a different ontology and predicates that apply to specific types of objects. The authors follow Vendler’s judgments and assume that POSS-*ing* and ACC-*ing* are semantically equivalent.

In their theory, perfect and imperfect nominals use different means to turn a formula into an object, also known as *reification*. The event reading of nominals is modeled by “event-types”, notated as $\exists a.\phi[\mathbf{x}, a]$, with a predicate ϕ , a tuple of arguments \mathbf{x} and a temporal parameter a bound by the existential quantifier. Event types are able to be instantiated as event tokens when associated with a time through the predicate *Happens*:

$$(21) \quad \textit{Happens}(\exists a.\phi[\mathbf{x}, a], t)$$

The meaning of imperfect nominals is modeled as “fluents”, which is notated as $\phi[\mathbf{x}, \hat{a}]$, where \hat{a} is a bound temporal parameter. The predicate *Happens* does not apply to fluents (which makes sure verbal gerunds do

not go with eventive predicates), but a truth predicate *HoldsAt* determines if a fluent holds at a certain time:

$$(22) \quad \text{HoldsAt}(\phi[\mathbf{x}, \hat{a}], t) \leftrightarrow \phi(\mathbf{x}, t)$$

This means that iff a fluent that represents *Clay’s winning the game* holds at t , then Clay wins the game at t . This makes fluents essentially functions from times to truth values, or temporally bound properties. Fluents are also related to event types and times by *Initiates* and *Terminates*, where an event type initiates or terminates a fluent at a certain time.

The authors argue that narrow containers denote sets of event tokens, and therefore are incompatible with imperfect nominals. Since this theory provides the means to locate different objects in time, one may propose that the preposition *after* has two different entries: when it selects an event type e (23a), it denotes the time following a token of that type; when it selects a fluent (23b), it denotes the time following the termination of that fluent:

$$(23) \quad \begin{array}{l} \text{a. } \llbracket \text{after} \rrbracket = \lambda e \lambda t \exists t_1 [\text{Happens}(e, t_1) \wedge t_1 < t] \\ \text{b. } \llbracket \text{after} \rrbracket = \lambda f \lambda t \exists e, t_1 [\text{Terminates}(e, f, t_1) \wedge t_1 < t] \end{array}$$

I will not delve into Hamm and van Lambalgen’s framework because it is very different from what we have been assuming so far, but the idea that the denotation of verbal gerunds is closely related to time, while still being ontologically different from events, coincides with the path that this chapter takes to accounting for the data in the last subsection. What I wish to pursue is an account on which the interpretation of temporal prepositions is consistently preserved. In the minimal representation below, *after* denotes a set of times that follows its complement if it is a temporal expression: *after 3 pm*. When it takes eventualities, the temporal structure of the eventuality is accessed through a temporal trace relation.⁷

⁷Here the relation between the two times are maximally simplified. When t_1 is a complex temporal structure, the actual point of time relative to which *after* is interpreted is determined by a few operators, see Condoravdi (2010). What is relevant here is that one has to obtain a temporal structure from the complement of the preposition.

- (24) a. $\llbracket \text{after} \rrbracket = \lambda t \lambda t_1 [t_1 < t]$
 b. $\llbracket \text{after} \rrbracket = \lambda t \lambda e_1 [\tau(e_1) = t_1 \wedge t_1 < t]$

5.2. POSS-*ing* and Kimian states

If the ontological status of POSS-*ing* is to account for its distribution, then we need to find some sort of abstract object that has certain temporal properties. In this section, I argue that Kimian states (K-states for short) is such an ontological object that captures the behavior of POSS-*ing*.

5.2.1. Kimian States

The concept of K-states originates from Kim’s (1976) conceptualization of events as temporally bound property exemplifications. An event is represented by an object x , a property P and a time t so that the event $[x, P, t]$ exists iff object x exemplifies property P at time t . Two events $[x_1, P_1, t_1]$ and $[x_2, P_2, t_2]$ are identical iff $x_1 = x_2$, $P_1 = P_2$ and $t_1 = t_2$.

Despite being intended for events, Kim’s proposal suffers from deficiencies that make it unsuitable for event representation and identity. One of them is that, as Kim himself notices and also pointed out by Engelberg (2005), events represented in this way are dependent on their descriptive content. The identity condition is so strict that one and the same event, when described as *Clay ate the apple* and *Clay devoured the apple*, would not be treated as identical events because *eat* and *devour* are different predicates (or properties). But events, conceived as concrete objects, should remain identical as long as they can be identified by their description. Another problem, as Moltmann (2019b) demonstrates, is that events on this account lack most of the properties of events qua concrete entities: being perceivable, having spatial location and manner specification, etc. As a result, they are more similar to abstract entities such as facts.

For these reasons, Kim’s conceptualization of events is generally dispreferred in comparison to the Neo-Davidsonian (Parsons, 1990) one. This idea becomes relevant again in the discussion about two types of

state predicates, where a distinction has been drawn between Davidsonian states (hereafter, D-states) and K-states (Maienborn, 2005).⁸ D-states are introduced by predicates like *sit*, *stand*, *lie* and *sleep*, which are classified as states (Dowty, 1979; Vendler, 1967b) but show some properties of events, such as accepting spatial and manner modification, and serving as complements of perception verbs. Other stative predicates, like *resemble* and *weigh* and those headed by copulas, show none of the ontological properties of eventualities:⁹

- (25) a. Karin stands/sits calmly in front of the fridge .
 b. *Karin is hungry/resembles Kate calmly in front of the fridge.
 c. Stefan saw Karin stand/sit in front of the fridge.
 d. *Stefan saw Karin be hungry/resemble Kate.

Maienborn (2005) proposes that D-states should be treated on a par with Neo-Davidsonian eventualities and introduce state variables, and that K-states be represented as abstract objects characterized by the relation between an object and a property. The following are the representations from Maienborn (2019):

- (26) a. Mary slept in the hammock.
 $\exists e_s[\text{SLEEP}(e_s) \wedge \text{THEME}(e_s, \text{mary}) \wedge \text{LOC}(e_s, \text{IN}(\text{the hammock}))]$
 b. The apple is red: $\exists s \exists r[s : B(\text{the apple}, r) \wedge \text{RED}(r)]$
 c. to be: $\lambda P \lambda x \lambda s \exists r[s : P(x)(r)]$
 (Maienborn, 2019, pp. 85–86)

Example (26a) asserts the existence of a *sleep* state whose theme is Mary and whose location is in the hammock; (26b) asserts that a K-state exists, characterized by the bearing relation *B* between the apple and the trope *r* it bears. Tropes are concrete manifestations of properties (see Moltmann, 2019a): for example, redness in general is a property, but the redness manifested by a particular apple is a trope. In this case, $\text{RED}(r)$ means

⁸The two kinds of states are also referred to, respectively, as concrete states and abstract states in works like Moltmann (2013).

⁹Maienborn’s (2005) examples are in German, but English shows similar contrasts.

that r is a trope of redness, and $B(\text{the apple}, r)$ means that r is borne by the apple.

(26c) interprets the copula *be* as a relation between a property, an object and a K-state, providing a description of a K-state characterized by a relation between an individual and a trope. The property P comes from *red*, the object x from *the apple*, and the K-state variable is existentially closed by the tense. In (26b), the time of the K-state is not represented explicitly, but given the present tense, the time of the K-state t should include the time of utterance or *now*: $n \subseteq t$.

Now, a move from stative predicates to nominalizations is reasonable: Kim’s original idea presents events as a reified tuple, as if it is nominalized. Some applications of K-states in nominalization include Fábregas and Marín (2010) for state nouns in Spanish, and Bücking (2012) for a type of nominalized infinitive in German. Phrases claimed to denote K-states are often contrasted with deverbal or deadjectival nouns showing that the same predicate can give two ontologically distinct nominalizations (Bücking, 2012; Moltmann, 2013; Maienborn, 2019):

- (27) a. Nina sah Pauls Müdigkeit.
Nina saw Paul’s tiredness
b. *Nina sah Pauls Müde-Sein.
Nina saw Paul’s tired-be.INF
Intended: Nina saw Paul’s being tired. (Bücking, 2012)

Bücking (2012) claims that the deverbal or deadjectival nominalization of a K-state predicate (27a) brings in a trope, while the nominalized infinitive in German (27b) introduces a K-state. The same can be said of English:

- (28) a. Clay’s resemblance to Alex is visible/is slight.
b. *Clay’s resembling Alex is visible/is slight.

In the examples above, trope-referring expressions appear in perception reports (27a) and accepts degree predication (28a), while expressions referring to K-states do not.

With Maienborn’s claim that a set of stative predicates denote K-

states, one may assume that their nominalization through *POSS-ing* (28b) inherits the ontological status of the predicate. The problem is, when the predicate is eventive, *POSS-ing* does not inherit its status and denote an event. As I will show, a better alternative is that nominalization through *POSS-ing* uniformly gives a K-state object, regardless of the ontological status of the verb. In fact, *POSS-ing* created from eventive predicates also demonstrates the ontological properties of K-states.

5.2.2. *POSS-ing* shows properties of K-states

The idea that *POSS-ing* denotes K-states can be traced back to Richard Larson’s suggestion mentioned in Abney (1987), that *VP-ing* denotes a property which is possessed by the subject. This idea was however not developed further in Abney’s work. A K-state adds time as a third component to this proposed interpretation, which provides it with temporal properties necessary to account for specific data.

Maienborn (2019) provides an extensive list of ontological properties that distinguish K-states from eventualities and tropes:

- (29)
- a. K-states are not accessible to direct perception, have no location in space, and unique manner of realization.
 - b. K-states can be located in time.
 - c. K-states are reified entities of thought and discourse.
 - d. K-states are closed under complementation.
 - e. K-states are not causally efficacious.
 - f. K-states do not involve participation.

Linguistic diagnostics can be applied to *POSS-ing* to test for these properties. The property (29a) is already illustrated for *POSS-ing* in Chapter 2, and I argue in the last section that co-occurrence with temporal prepositions constitutes evidence for (29b). In analogy to the tests for temporal location, the incompatibility with spatial prepositions can be used to show that *POSS-ing* cannot be located in space. Spatial prepositions are not attested to take *POSS-ing* in the corpus, nor is the phrase *the location/place of* + *POSS-ing*.

- (30) *Clay danced fifty meters from/in front of/behind/at/below/above Nikita’s winning the game.

The diagnostic for the property (29c) is that POSS-*ing* is available for anaphoric reference:

- (31) [Marxism’s standing Hegel on his head]_i may have reversed his idealism, but it_i did not change the mode of operation of a conceptual system which remains collusively Eurocentric. (BNC)

The property (29d) suggests that a negated K-state remains a K-state. Most contexts where POSS-*ing* is used accept it whether negated or not (32a); in contrast, an event-referring expression does not remain event-referring when negated, that is why *the non-arrival of the train* (32b) does not have the same distribution as its event-referring counterpart.

- (32) a. Clay’s (not) winning the game was surprising.
b. The (*non-)arrival of the train took place at 9 am.

The distribution of negated eventive expressions is in fact similar to that of POSS-*ing*, and they are usually argued to share the ontological status with POSS-*ing* (Hamm & van Lambalgen, 2002; Zucchi, 1993).

A potential problem with the claim that K-states retain their distribution when negated is that the temporal prepositions in Section 5.1 do not go as well with negated POSS-*ing*. As a variation of (10b), (33a) is uninterpretable. I believe that this is not due to an ontological difference, but that it is impossible to obtain a meaningful point of time from the negated POSS-*ing*, as I discuss in the next section. Basically, if the people were never transferred in the context of (33a), there is no change involved and one cannot find a point of time to interpret the temporal relation. A negation that can be understood as part of an event (such as the constituent negation in J.-B. Kim & Sag, 2002), is not as problematic: the POSS-*ing* in (33b) can be understood as Iran’s refusing the principle,

- (33) a. ?We encountered some people upon their not being transferred to Easton.

- b. Another offensive occurred after Iran's not accepting the principle of a ceases-fire.

The property (29e), stating that K-states are not causally efficacious, may also appear problematic since POSS-*ing* seems to enter causal relations. Vendler (1967a), arguing that facts can be causes, shows that the verb *cause* can take POSS-*ing* as subject:

- (34) a. His having crossed the Rubicon caused the war.
 - b. His not being able to stop the cavalry caused the defeat.
- (Vendler, 1967a, p. 709)

However, this should not be taken as a contradiction to (29e) if causal efficacy refers to a specific notion of causation. The literature distinguishes two types of causation (Kistler, 1999; Rose, Sievers, & Nichols, 2021, among others): production-based causation, which involves a (typically physical) process between cause and effect, and dependence-based causation, which is understood as the effect having a logical dependency on the cause. Causal efficacy is associated with production-based causation, which is found between concrete entities.

The fact that we operate on two notions of causation is supported by linguistic evidence. Rose et al. (2021) argue that lexical causative verbs in English preferably express production based causation, while periphrastic causative, using the verb *cause*, is underspecified in relation to the type of causation. The authors show that absences such as *the lack of light* can be attributed as causes if a periphrastic causative is used. Martin, Rose, and Nichols (2023) observe through examples such as (35b) that lexical causatives do not combine well with other expressions that denote abstract entities, such as (*the fact*) *that*-clauses or POSS-*ing*, which they analyze as fact-denoting. A contrast can be made between a concrete causer and a similar POSS-*ing* on the one hand, and between lexical and periphrastic causatives on the other:

- (35) a. The overheated battery burned the phone/caused the phone to burn.

- b. The battery’s being overheated #burned the phone/caused the phone to burn.

Therefore, it is not contradictory that *POSS-ing* can be involved in dependence based causation while lacking causal efficacy. My collection of *POSS-ing* from BNC also does not contain any lexical causative with *POSS-ing* as subject.

So far, I have shown that the referent of *POSS-ing* differs from eventualities but shares most properties with K-states. The last property (29f), about the lack of participation in K-states, is reflected in the unacceptability of comitatives and peripheral participants (Maienborn, 2019, p. 83). Comitatives are allowed within *VP-ing*, but not outside, like spatiotemporal adverbials:

- (36) ?Clay’s breaking the record with George was as fascinating as Kye’s with Josh.

According to Maienborn, peripheral participants can be tested using the verb *accompany*. This use is attested in one case in my data:

- (37) I may talk of experiencing a sly, unpleasant look as a leer, but this is not a matter of some sensation accompanying my seeing the look. (BNC)

By coinciding with a concrete thing (a sensation), it seems that *my seeing the look* refers to something more concrete than a timeless fact, but it is hard to claim that the sensation participates in an *seeing* event. Since K-states are located in time, the sensation could simply be experienced at the time of *my seeing the look*, which does not violate this property.

5.2.3. *POSS-ing* as a K-state in DRT

In this section I explore how *POSS-ing* is represented as a K-state in Discourse Representation Theory (DRT; Asher, 1993; Kamp & Reyle, 1993). The formalization of *POSS-ing* as facts or possibilities in DRT according to Asher has been presented and discussed in Section 1.1.3. The repre-

sensation of K-states in DRT is explored in Maienborn (2005) and alternatively, without DRT in Maienborn (2019). In this subsection, I assume an analysis that is very similar to Asher’s *POSS-ing*, except that *POSS-ing* as a K-state is located in time in relation to its embedded event.

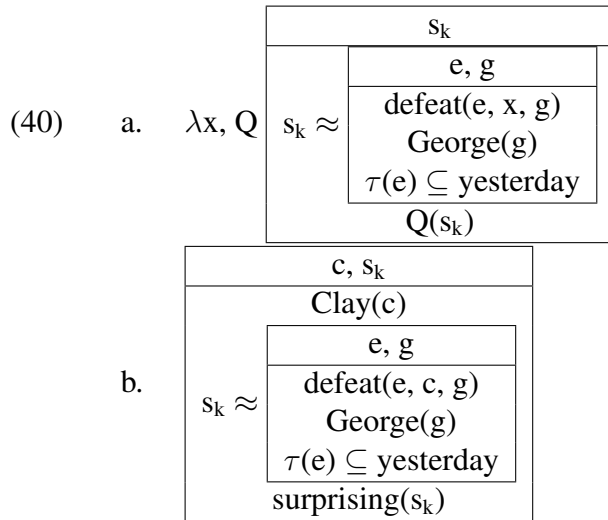
The construction of a K-state in DRT starts from the property, which is provided by the *-ing* form, its complements and modifiers. According to Asher, *POSS-ing* contains an IP structure which enables the introduction of a subDRS into the discourse, consisting of a property P and an object x. The time is not a crucial component at this stage.

$$(38) \quad \lambda P, x, s_k \begin{array}{|c|} \hline \\ \hline s_k \approx \begin{array}{|c|} \hline \\ \hline P(x) \\ \hline \end{array} \\ \hline \end{array}$$

In order for *POSS-ing* to take spatiotemporal modifiers, there must be an eventuality argument in the subDRS. I follow Asher in assigning the predicate a Davidsonian event argument, which can be temporally located in the subDRS: (39a) represents *defeating George yesterday*. The embedded predicate may also refer to a state (either Davidsonian or Kimian): (39b) represents *being red* following (26b), which has a state variable s.

$$(39) \quad \text{a. } \lambda x \begin{array}{|c|} \hline e, g \\ \hline \text{defeat}(e, x, g) \\ \text{George}(g) \\ \tau(e) \subseteq \text{yesterday} \\ \hline \end{array} \quad \text{b. } \lambda x \begin{array}{|c|} \hline s, r \\ \hline \text{B}(s, x, r) \\ \text{red}(r) \\ \hline \end{array}$$

Since we consider *POSS-ing* a definite description by virtue of being a possessive structure on the surface, the K-state referent s_k is introduced to the main DRS (40a). The embedded event referent remains in the subDRS and as a result, matrix predicates only apply to the K-state referent. This explains why narrow containers do not occur with *POSS-ing*.

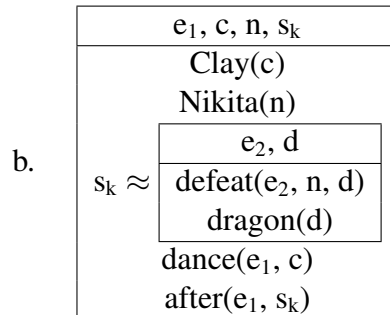


(40b) is a representation of *Clay’s defeating George yesterday was surprising*.¹⁰ The referent and condition of *Clay* is placed in the main DRS because *Clay* is a proper noun and is the possessor of *POSS-ing*, which is often familiar in the discourse. Eventually, all the referents and conditions in (40b)’s subDRS can be copied into the main DRS because an event of Clay defeating George within yesterday can be inferred from the sentence; it may also find an antecedent in a larger context.

When a temporal preposition takes a *POSS-ing*, it should also be applied to the K-state referent. In the following example (41), *after* expresses a temporal relation between the matrix event and the K-state, which roughly translates to $\tau(e) < \tau(s_k)$. On the current account, the temporal trace relation applies to both eventualites and K-states.

(41) a. Clay danced after Nikita’s defeating the dragon.

¹⁰The matrix predicate *be surprising* should also introduce a K-state, but it is omitted for simplicity.



The problem now is to determine the temporal trace of a K-state from its embedded content. The embedded eventualities in the *POSS-ing* following temporal prepositions are typically achievements or accomplishments, which have a natural point of culmination. In an event of Nikita defeating the dragon, the point of culmination is when Nikita passes from the state of not having defeated the dragon to having defeated it, and both *before* and *after* are interpreted relative to this point. In this sense, the embedded event appears as if it is in the perfect aspect: the temporal trace of a K-state picks up the first moment of the resultant state of the embedded event, the state that results from the happening of the event. If the embedded eventuality is a state, it should pick up the first moment of that state because it is the point of change: for a state of *Oli's being in love*, it is the first moment of it that marks the change from not being in love to being in love.

Temporal prepositions cannot be easily interpreted with respect to a *POSS-ing* based on classical negation (33a) or K-state predicates (39b). In both cases there is no embedded event from which the K-state can draw its temporal trace, unless the *-ing* predicate can be coerced into one that encodes a change (33b).

Although the interpretation of temporal prepositions is based on one point in time, K-states are still seen as durative states. Intuitively, the K-state *Nikita's defeating the dragon* obtains from the moment Nikita defeated the dragon and extends infinitely into the future. This is consistent with our intuition about facts, although they are claimed to lack temporal location: *the fact that Nikita defeated the dragon* is not a fact before

the point she defeated the dragon, and stays a fact since that point. This makes it only relevant to locate the K-state in time according to its initial point, and therefore predicates like *last* are uninterpretable with *POSS-ing*. The fact that those temporal prepositions that select for a durative process, such as *throughout* and *during*, are not attested to take *POSS-ing*, is also compatible with this analysis: if the duration of the denotation of *POSS-ing* is not delimited, it makes little sense to talk about what happens during that time.¹¹

Although I propose that the time of a *POSS-ing* is derived from the resultant state of its embedded event, *POSS-ing* still denotes an abstract object and is not simply the resultant state of its embedded event. The latter claim will have little conflict with the traditional fact reading: a fact is obtained if a corresponding event has happened, and a resultant state is can be said to be possible only if its corresponding event is possible. However, it becomes very strange when there is no token inference:

- (42) a. Clay’s leading the team would be a good idea.
b. *Clay’s having led the team would be a good idea.

(42a) would be referring a resultant state of a potential event, which is not intuitive. Moreover, *Clay’s leading the team* and *Clay’s having led the team* (42b) would be equivalent, which is also not true.

5.3. Discussion

In this section, I demonstrate some other properties of *POSS-ing* that are captured by the K-state analysis. Finally, I return to how the fact that *POSS-ing* is located in time explains the *with(out)* asymmetry.

¹¹If we do not consider the incompatibility with *throughout* and *during*, we can make *POSS-ing* inherit the temporal trace of its embedded event: the time of *Clay’s playing the game* is the time during which Clay played the game. The interpretation of prepositions will stay the same, and this makes K-states very similar to fluents, which can hold at certain times (Hamm & van Lambalgen, 2002). However, this may predict uses like **the duration of Clay’s playing the game* and **Clay’s playing the game lasted two hours*.

5.3.1. Other properties of POSS-*ing* modeled by K-states

Apart from those listed by Maienborn (2019), POSS-*ing* has a few more properties that are captured well if they are modeled as K-states. First, the possessor of POSS-*ing*, being the bearer of the property in a K-state, cannot be an expletive *there*.¹²

(43) *There’s being a dinosaur in the room surprised Taylor.

On an account that treats the referent of POSS-*ing* as a propositional entity, (43) needs to be explained with additional rules, but as a K-state, *there* as an expletive simply cannot bear the property of *being a dinosaur*. At the same time, we know from the last chapter that the subject in POSS-*ing*, similar to a true possessor, tends to be given in the context and helps in anchoring the gerund to the discourse. It is therefore natural to ascribe properties to the subject.

Second, it is admitted by Kim (1976) and pointed out by Engelberg (2005) that in the Kimian/DRT representation $[x, P, t]$ there is opacity associated with the property P , which can lead to the same situation being described as different K-states. This is an advantage in the modeling of POSS-*ing*, since the referent of POSS-*ing* depends on the descriptive content:

- (44)
- a. Clay’s winning the game was surprising.
 - b. Clay’s winning the game in two minutes by exploiting an unknown bug was surprising.
 - c. Clay’s winning the game was as surprising as Clay’s winning the game in two minutes.

¹²Both Abney (1987) and Portner (1992) have talked about the unacceptability of *there* in POSS-*ing*. Abney demonstrates that expletive *it* is acceptable, and indeed it is attested in the corpus:

- (1) Ron asked for secrecy so that he could sign another driver without its being known that he was truly needy. (BNC)

In this case, the expletive *it* can be seen as a cataphora to the clause: the proposition *that he was truly needy* bears the property *being known*.

(44b) does not entail (44a) in a context where Clay won the game so often that him winning was not surprising. (44c) is not a tautology, because the two gerunds can have different degrees of surprise. It is also true that most contexts where POSS-*ing* appears, including *be surprising*, are intensional, and most extensional contexts, like those created by narrow containers, do not accept POSS-*ing*, so it is hard to claim that the opacity always comes from POSS-*ing* itself, but the two sources of opacity could perfectly coexist.

With regard to temporal prepositions, one may argue that they make a context where POSS-*ing* seems to be transparent. The following examples, uttered in the same context where Clay only won the game once, would be truth conditionally equivalent:

- (45) a. Nikita danced after Clay’s winning the game.
b. Nikita danced after Clay’s winning the game in two minutes by exploiting an unknown bug.

In this case, (45b) entails (45a) because winning in two minutes entails winning. Also, the two POSS-*ing* phrases can recognize the same event as their embedded event, in which case they share the same temporal location even if they are different K-states.

Engelberg (2005) also points out that in Maienborn’s notation, the object bearing the property in a K-state is transparent, which he takes to be a problem of K-states: *Clay’s winning the game* is the same K-state as *the best player’s winning the game* if Clay is actually the best player. This is also true in my DRT analysis, since the possessor is placed in the main DRS. Considering that the possessor is mostly given and referential, and serves as an anchor to introduce new information to the discourse, it is normal that a speaker expects the hearer to be able to identify the possessor referent and not see it as opaque.

5.3.2. Revisiting the *with(out)* asymmetry

This chapter shows that, according to my data collection, the denotation of POSS-*ing* has a mixed status, with most of the properties of abstract

entities but also a temporal location. I argue that *POSS-ing* can be modeled by K-states, an ontological object that is more concrete than facts by having temporal properties, but also more abstract than eventualities. I propose that the time of a *POSS-ing* is derived from the embedded event of the K-state it denotes: it starts from the first moment of the resultant states of the event and extends infinitely. My analysis also makes a new argument for the K-state as an ontological object and its application in nominalizations.

We can now return to the *with(out)* asymmetry and see if it is explained by the proposal that *POSS-ing* is a K-state. It is of course true that *POSS-ing* is now located in time, and cannot be temporally anchored again by *with*. However, the interpretations of *with(out)* in Chapter 5, which take event kind descriptions as their complement, simply do not apply to K-states because K-states are abstract objects and not predicates of an event kind variable. I can only offer a rough idea for now: K-states denoted by *POSS-ing* still work like event kinds, but if they are to be instantiated, they can only be instantiated by their embedded event; they are like kinds that are constructed from a specific event. If *with + POSS-ing* is to be used as a sentential adverbial, it cannot be anchored in relation to the time of the main clause, but will provide temporal information for the main clause, like a temporal adverbial.

The most important difference between the K-state analysis in this chapter and the event kind descriptions in Chapter 3 is that *POSS-ing* is now referential. In the next chapter, I argue that the event kind analysis still applies to *ACC-ing*, which is non-referential.

Chapter 6

THE NON-REFERENTIALITY OF ACC-ING

This chapter sketches an analysis of *ACC-ing* as a non-referential expression. First, in Section 6.1, I discuss why *POSS-ing* is a referential expression and the two verbal gerunds should be distinguished by referentiality. Section 6.2 lays the background of the analysis. *ACC-ing* being non-referential is consistent with the assumption that it can be temporally anchored by *with*. Syntactically, the lack of DP in *ACC-ing* contributes to it not being referential; its lack of nominal projections even makes it possible to claim that *ACC-ing* is not a nominalization, allowing it to share a semantic analysis with other superficially similar constructions. My semantic interpretation of *ACC-ing* is an adaptation of the event kind analysis from Grimm and McNally (2015). In Section 6.3, non-referentiality is handled in DRT using thematic arguments from Farkas and de Swart (2003). Section 6.4 discusses the challenge of explaining why *ACC-ing* does not appear with narrow containers.

6.1. The referentiality of *POSS-ing*

In Chapter 4, I have reviewed Portner’s claim about the definiteness of *POSS-ing*, which has two aspects: a factive presupposition, suggesting

the existence of an event described by the gerund; and a familiarity presupposition, suggesting that the situations described *POSS-ing* are either under discussion, or are accommodated by the hearer as something familiar. *ACC-ing*, in contrast, does not presuppose event tokens or familiarity. In this chapter, I argue that the concept behind these phenomena—what Portner describes as definiteness—is actually referentiality.

The referentiality of expressions with rich descriptive content and a complex structure, such as complement clauses, has been discussed in various studies (De Cuba & Ürögdi, 2010; Haegeman & Ürögdi, 2010; Sheehan & Hinzen, 2011), but this aspect has not been addressed in the context of verbal gerunds. As De Cuba and Ürögdi (2010) have argued, referentiality should be separated from factivity and discourse givenness. Although their effects are often intertwined, they essentially operate on different levels and are not in direct correlation to each other. Haegeman and Ürögdi (2010) argue that referentiality is weaker than both presupposition and givenness. In the annotation task reported in Chapter 4, we have seen that both *POSS-ing* and *ACC-ing* can be factive or non-factive; *POSS-ing* prefers contexts with token inference, but factivity is not a necessary condition. Also, *POSS-ing* and *ACC-ing* are not distinguished by their discourse givenness.

Referentiality is, according to De Cuba and Ürögdi (2010), only dependent on syntax. *POSS-ing* is commonly analyzed as a DP due to being a possessive structure. *ACC-ing* can be analyzed in various ways, especially considering that it has been classified together with different NP + V-*ing* constructions. In the next subsection, I introduce some syntactic analyses that support the lack of D in the structure of *ACC-ing*, making it possible for the difference in referentiality to be derived from their difference in syntax.

Referentiality is defined as the potential to refer (Haegeman & Ürögdi, 2010). In this sense, *POSS-ing* can refer and *ACC-ing* cannot. The annotation in Chapter 4 was carried out under an assumption that both verbal gerunds can refer, but since the annotation scheme put more emphasis on the presence of information in the context than the identity of discourse referents, it is not incompatible with the idea that *POSS-ing* and *ACC-ing*

are different in referentiality. The annotation still measures the anchoring of the descriptive content to the discourse. Referentiality can be better represented in DRT, where non-referential expressions do not introduce discourse referents. In the K-state analysis of the last chapter, *POSS-ing* refers to the state of its subject holding the property described by the *V-ing*. The K-state is derived from an eventuality, possibly implicit, which is embedded in the subDRS. By using *POSS-ing*, the speaker makes reference to that eventuality, either in the discourse or in mind, presenting the information as if it is known.

6.2. *ACC-ing* as a non-referential expression

This section presents arguments in favor of the non-referentiality of *ACC-ing*. First, *ACC-ing* is found to be selected by temporal prepositions. The last chapter treats *POSS-ing* in such positions as denoting K-states, which carry their own temporal trace, because they need to be located in time for the temporal relation to be interpreted. I argue that *ACC-ing* in these positions take a similar approach to complements of *with*, which does not require *ACC-ing* itself to be located in time; instead, temporal prepositions facilitate the instantiation of an event token corresponding to the kind.

Next, I turn to syntactic analyses supporting the lack of D in *ACC-ing*. The DP projection has been argued to account for the nominal distribution of *ACC-ing*, and is associated with referentiality. If *ACC-ing* lacks a DP projection, it actually has no nominal projection and does not need to be treated as a nominalization. This seemingly radical view has its advantages: we no longer need to distinguish *ACC-ing* as a nominalization from other NP + *V-ing* structures, and they can be argued to share a common semantic analysis as event kind descriptions.

6.2.1. ACC-*ing* selected by temporal prepositions

My data collection does not contain any occurrence of ACC-*ing* following temporal prepositions. However, this use can be found with corpus searches looking for “preposition + accusative pronoun + -*ing* form”:

- (1) a. I must confess I was a little disappointed when I first saw him, because he looked such a little old scrap *after me being used to sheepdogs*. (BNC)
- b. We’re less than twenty-four hours away *from you beginning this inquiry*, this inquest you have longed for. (COCA)
- c. However, please do not hesitate to contact me if further clarification is needed *prior to it being distributed*. (BNC)
- d. And *since me having beef with these other big artists*, I’ve only gotten richer. (BNC)

It is unclear why such examples did not show up in my data collection: it is possible that they were very rare in comparison to the large amount of ACC-*ing* data or they were parsed in a way that enabled them to escape my search pattern. In these examples, accusative pronouns cannot serve alone as the complement of temporal prepositions, so the -*ing* forms cannot be postnominal modifiers. As is the case with POSS-*ing*, a variety of temporal prepositions can be found taking ACC-*ing*, most of them being point-selecting prepositions and none of them being period-selecting.

ACC-*ing* following temporal prepositions is not a standard use in Present Day English, though it is accepted by some native speakers. It used to be a variant of augmented absolutes when the augmentor was not limited to *with(out)*, but its use had already declined by Late Modern English to the point that augmentors other than *with(out)* were almost unattested (van de Pol, 2019).

According to van de Pol (2019), the loss of augmentors is associated with the reanalysis of NP + V-*ing* in augmented absolutes as gerunds, as a result of the rise of verbal gerunds and their strong connection to prepositions (see Fanego, 2004). *With* in absolutes became grammaticalized and now specialize in connecting discourse units, while other preposi-

tions taking verbal gerunds retain their lexical meanings.

Does (1) suggest that *ACC-ing* also denotes K-states? Contrary to this interpretation, such instances can be treated in the same way as augmented absolutes taking *with*. Unlike *with*, which keeps the temporal relation between *ACC-ing* and the main clause underspecified until it is resolved with discourse relations, temporal prepositions specify the temporal relation. The following representation of *after* shows it as a sentential modifier, adjunct to the time of the main clause t_1 . *After* takes a event kind description $\lambda e_{k2}[P_2(e_{k2})]$ as its complement and relates the main clause time to the temporal trace of a token of the given kind description with a temporal relation $>$.

$$(2) \quad \llbracket \text{after} \rrbracket = \lambda P_2, e_{k2}, t_1 [P_2(e_{k2}) \wedge \exists e_2 [\mathbf{R}(e_2, e_{k2}) \wedge t_1 > \tau(e_2)]]$$

This interpretation is similar to that of *with* heading a sentential modifier in Chapter 3 and the interpretation of free adjunct from Grimm and McNally (2015). It is different from *POSS-ing* in the last chapter in that *POSS-ing* as a K-state brings its own temporal trace, but the denotation of *ACC-ing* does not. The time $\tau(e_2)$ is only available in virtue of the temporal preposition selecting *ACC-ing* which instantiates the event kind.

This interpretation does not prevent period-selecting prepositions such as *during* and *throughout* from taking *ACC-ing*. Given the rarity of temporal preposition + *ACC-ing*, it is difficult to decide if *during* and *throughout* are more or less acceptable than others.¹ It is possible that even when temporal prepositions were generally accepted in augmented absolutes, period-selecting prepositions were rarely used in this construction. Further experiments could help clarify these facts, but their (un)acceptability is not essential to the current discussion.

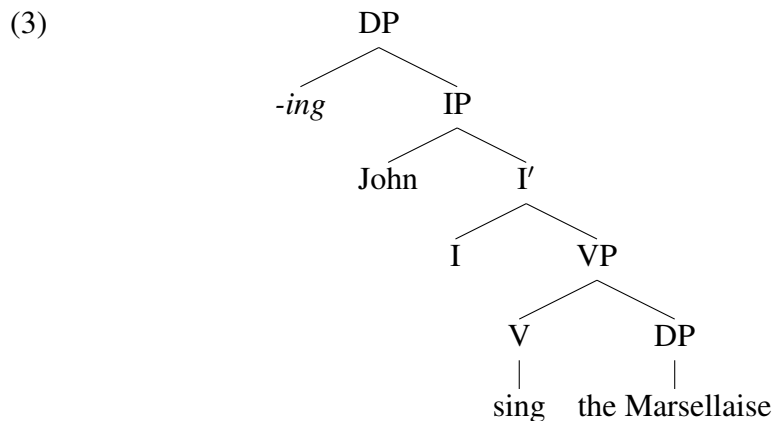
¹One example that I am aware of is the following, which asserts that two processes develop over the same timespan:

- (1) Along with characters becoming more abstract, they also standardized.
(<https://youtu.be/LAeeUwF-clw?si=tLyF04Kp8Nue80-W&t=84>)

6.2.2. The syntactic structure of ACC-*ing*

When following temporal prepositions and *with(out)*, ACC-*ing* is a non-referential expression, bringing with it only the descriptive content but no event token. One might think that the lack of referentiality is unique to augmented absolutes and cannot be extended to ACC-*ing* in general. In this subsection, I present some syntactic accounts in the literature supporting the lack of DP in the structure of ACC-*ing*, which is associated with the lack of referentiality.

I should first point out that many studies do assume a D node or a DP projection in ACC-*ing*, despite there being no overt determiner. For example, Abney (1987, p. 223) gives the following analysis for ACC-*ing*:



In Abney’s analysis, *-ing* serves to convert IP to DP; *-ing* is not a D head, nor is there a *D'* level. For Abney, the DP projection accounts for the external distribution of ACC-*ing*, which is similar to noun phrases. Actually in later accounts, being DP is not a requirement for nominal distribution. Small clauses formed with a past participle, for example, are almost never considered nominalizations, but they can appear in subject position and after prepositions, which are typically used to show that a phrase has nominal distribution. See the following examples from Svenonius (1994):

- (4)
- a. [These two difficulties overcome] makes the rest easy.
 - b. the consciousness of [many talents neglected], [many oppor-

tunities missed], [many erratic and perverted feelings constantly at war within his breast, and defeating him]
(Svenonius, 1994, p. 8)

The fact that (4a) shows singular agreement makes sure that the past participle is not a post-modifier of *these two difficulties*. Small clauses are analyzed as PredP (Predicate Phrases) in Svenonius (1994), linking the NP and the predicate that follows with a predication relation. The situation is similar in ACC-*ing*: it is the predication that links the ACC-*ing* subject to the *-ing* form.

We can also note that on Abney’s account the DP projection lacks a D head, and this violates X’-theory, which he assumes in his work. Abney argues that the lack of D explains why ACC-*ing* has no person or number feature, so that the coordination of two ACC-*ing* phrases results in singular agreement:

(5) Alex winning the duel and Clay losing was/*were complicated.

Asher’s (1993, p. 194) syntactic analysis is very similar to Abney’s, except that *-ing* is on the I node and there is a lexically null D head as the sister of IP. Recall that ACC-*ing* is referential on Asher’s account: it introduces a possibility or fact referent precisely thanks to this null determiner, which he takes to be a silent definite determiner *sthe*. For Asher, the coordination in (5) probably occurs on the IP layer so that only one singular referent is involved.²

Before Abney (1987) proposed the DP hypothesis, there had been accounts for ACC-*ing* as a non-finite S structure (Horn, 1975; Reuland, 1983). In more recent works, Pires (2006) and Iordăchioaia (2020) both hold that ACC-*ing* lacks a DP projection. One of the arguments from Pires (2006, p. 18) is that ACC-*ing* (a “clausal gerund” in his term) accepts

²Two ACC-*ing* phrases in a coordination can still lead to plural agreement if the speaker wishes to emphasize their individuality:

(1) Alex winning the duel and Clay losing *is/are two completely different things.

there-insertion, which is impossible for DPs and especially *POSS-ing*.

- (6) Clay counted on there/*there’s being no actual duel.

This argument is unconvincing considering that the restriction may come from the genitive case, as **there’s picture* or **here’s cat* are not acceptable possessive structures. Another test is *wh*-extraction, which is possible for *ACC-ing* and impossible for *POSS-ing*. Since extraction from DP is not allowed, this means that *ACC-ing* is not a DP.

- (7) [Which game]_i did you imagine Clay(*’s) winning t?

Pires (2006) and Iordăchioaia (2020) both argue for a bare TP/IP structure. Grimm and McNally (2015) assume that *ACC-ing* has the simplest structure of a VP.³ In a later paper, the authors present striking examples from the Internet of *ACC-ing* taking an overt definite determiner, illustrated by their (15b) below:

- (8) Her being into him is less of a problem. It’s *the him wanting someone else* that’s the problem. (Grimm & McNally, 2016, p. 172)

If *ACC-ing* is able to take an overt *the*, it is unlikely that it takes a definite null D most of the time.

Outside the scope of gerunds, DP is used as a syntactic means to account for the factive presupposition of clauses (Kastner, 2015; Moulton, 2020). Kastner argues that while clausal complements are commonly CPs (9a), those selected by factive verbs (9b), which are verbs that presuppose the truth of their propositional complement, are actually [_{DP} Δ CP], where Δ is a null D head.

- (9) a. Taylor claimed that Ryan hit her with an arrow.
b. Taylor remembered that Ryan hit her with an arrow.

Kastner also argues that clauses of the type [_{DP} Δ CP] are referential,

³The possibility of negation and perfect aspect in *POSS-ing* is treated within the VP projection, for example, through constituent negation (J.-B. Kim & Sag, 2002).

which means that they correspond to discourse referents. A clause without a DP projection is then non-referential, not presupposed and does not introduce discourse referents; as I argue below, this is exactly how *ACC-ing* is like.

Returning to the syntactic structure of *ACC-ing*, it apparently also lacks an NP projection, for the *-ing* form accepts direct complements and adverbs, rejecting adjectival modification. On these accounts of *ACC-ing* without a DP layer, *ACC-ing* actually has no nominal projection, suggesting that it does not need to be considered a nominalization at all. While this view may appear radical in the lengthy thread of research on *-ing* nominals, I show in the next subsection that it avoids the need to distinguish *ACC-ing* from similar structures in Section 2.3.1.

6.2.3. *ACC-ing* is not a nominalization

In this thesis it has been assumed that *ACC-ing* is a nominalization, and in order to compare it with *POSS-ing* one has to first separate real *ACC-ing* from similar constructions of NP + *V-ing*. In Section 2.3.1, I attempt to distinguish *ACC-ing* from five main types of constructions that share the same surface form: complements of perception verbs (10a), quasi-causative verbs (10b), quasi-perception verbs (10c), bare absolutes (10d) and augmented absolutes (10e).

- (10)
- a. Hannah saw/heard/felt Clay approaching her.
 - b. Hannah had/got Clay running around.
 - c. Hannah found/caught Clay breaking the law.
 - d. Hannah entered the house, Clay following her.
 - e. Hannah entered the house, with Clay watching her from behind.

In Section 2.3.1, I assume that a construction is *ACC-ing* if it appears in contexts that accept *POSS-ing*, and some tests are applied to distinguish *ACC-ing*. In this section, I argue that the complicated situation can be avoided by not seeing *ACC-ing* as a nominalization. I do not intend to offer a common syntactic analysis for all the NP + *V-ing* constructions in

complement position; I claim, instead, that they all share the property of being non-referential, and Grimm and McNally’s (2015) interpretation of ACC-*ing* as an event kind description can be applied to all of them.

I focus on the NP + V-*ing* complements in (10a-c),⁴ because my analysis of augmented absolutes, which also applies to bare absolutes, already establishes them as event kind descriptions and as non-referential.

The first advantage of not seeing ACC-*ing* as a nominalization is that it does not have to share its distribution or ontological status with POSS-*ing*. This removes a few ontological concerns because we do not need to maintain a subset of all NP + V-*ing* structures that is ontologically consistent. Recall that it is hard to determine if the complement of depiction verbs (11a) must be an event, or it can also be an abstract object; *stop* (11b), in one of its reading, strongly implies that its complement is an ongoing process.

- (11) a. Hannah described/portrayed/depicted Clay playing the game.
 b. Hannah stopped Clay playing the game.

We can incorporate the eventive implication into the main verb and keep the interpretation of *Clay playing the game* consistent. In (12), a small adjustment is made to Grimm and McNally’s proposal: when ACC-*ing* is used in an argument position, it is no longer turned into an entity by Chierchia’s \sqcap operator, but rather provides the event kind variable as the argument.

$$(12) \quad \llbracket \text{Clay playing the game} \rrbracket = \lambda Q, e_{k2} [\sqcup \text{PLAYING}(e_{k2}) \wedge \text{AG}(\text{clay}, e_{k2}) \wedge \text{TH}(\iota x \text{GAME}(x), e_{k2}) \wedge Q(e_{k2})]$$

(13) is a simplified interpretation of (11b), where the main clause event is treated as an event token (instead of an instantiated event kind). The existence of e_{k2} is the result of existential closure. Here, *stop* takes e_{k2}

⁴Although ACC-*ing* is no longer a nominalization, the NP and -*ing* form still make one constituent. The NP + V-*ing* following quasi-perception verbs (10c) may be analyzed as an NP object and a secondary predicate; in that case they are not relevant to the current discussion.

as its complement. This interpretation fits one of the readings of *stop* which is close to *prevent*: when an event kind is stopped, it does not get instantiated.

$$(13) \quad \exists e_1, e_{k2} [\text{STOP}(e_1) \wedge \text{AG}(\text{hannah}, e_1) \wedge \text{TH}(e_{k2}, e_1) \wedge \text{PLAYING}(e_{k2}) \\ \wedge \text{AG}(\text{clay}, e_{k2}) \wedge \text{TH}(\iota x \text{GAME}(x), e_{k2})]$$

To capture a different reading in which an ongoing process is stopped, we can add a meaning postulate to (a different entry of) *stop*: when an event kind is stopped, there is an event token of that kind that is stopped, and such an event temporally overlaps the stopping event:

$$(14) \quad \text{a. } \forall e_1, e_{k2} [(\text{STOP}(e_1) \wedge \text{TH}(e_{k2}, e_1)) \rightarrow \exists e_2 [\mathbf{R}(e_2, e_{k2}) \wedge \\ \tau(e_1) \circ \tau(e_2)]]]$$

We may also incorporate a realization relation in the semantics of the verb just like the temporal prepositions in (2).

Turning to perception verbs, it is well known that what is perceived must be a concrete object and be perceivable. However, the possibility of having a kind description as the complement of perception verbs (10a) is not ruled out. In order to perceive an event kind, there must be a perceptible token. If Hannah saw Clay approaching her, she saw a token event that instantiated the kind *Clay approaching Hannah* which temporally overlapped the seeing event.

Most verbs that I have classified as taking typical *ACC-ing* simply take an event kind without instantiating it, such as the psych verbs in (15a) which express an attitude towards an event kind. However, those in (15b) strongly imply the existence of a token.

- (15) a. Hannah loves/dislikes/fears Clay winning the game.
b. Hannah appreciated/tolerated Clay turning up the volume.

In a word, each verb and context may have its own implications while the *ACC-ing* complement stays consistent across different contexts.

There are other proposed ways to divide between what is *ACC-ing* and what is not that can be ignored on the current view. For example,

Pires (2006) offers a syntactic analysis of his “clausal gerunds”, which include most of typical ACC-*ing*, free adjuncts and absolutes. One important characteristic for clausal gerunds is that they can be temporally independent of the main clause. Since perception verbs do not allow for different times in the main clause and in their complement (16a), *Clay winning the game* is not a clausal gerund in (16a) and is one in (16b).

- (16) a. *Today George saw Clay winning the game yesterday.
 b. Today George hate Clay winning the game yesterday.

If we apply the interpretation of temporal modifiers in Section 1.2.2, the unacceptability of (16a) is due to a conflict of temporal information: *see* implies an event token of *Clay winning the game* which overlaps the seeing, and therefore is located within *today*; the temporal modifier *yesterday*, at the same time, requires that any instantiation of the gerund to be within *yesterday*. If the two times are not in conflict, it is possible for the complement to have its temporal adverbial:

- (17) Yesterday George saw Clay winning the game at 3 pm.

The second point supporting the claim that ACC-*ing* is not a nominalization is that it avoids the problem that some verbs may be ambiguous between taking ACC-*ing* and taking a different NP + V-*ing* structure. Recall that *imagine* and *remember*, which are often discussed in ACC-*ing* literature, pattern like those verbs in (10) in some tests, and one may say that their complement is ambiguous. In Chapter 3, I face a similar situation with *without*: if the NP + V-*ing* complement of *without* is equivalent to POSS-*ing* in the same position, then it is ACC-*ing*; if we see *without* as the negative counterpart of *with* in the augmented absolute, then its complement is not ACC-*ing*. Now, ACC-*ing* is not distinguished from other NP + V-*ing* structures, so all this ambiguity is eliminated.

Third, the non-referentiality of ACC-*ing* facilitates its predicative use, which we have seen from my data collection:

- (18) a. [...] this was him trying to get off the subject when he was
 getting a bit nervous [...] (BNC)

- b. Nobody thought of anything. It was just everybody coming in for their meals. (BNC)

In the discourse annotation task in Chapter 4, I annotate some occurrences of ACC-*ing* as “given” in the discourse. In view of ACC-*ing* being non-referential, the discussion about (referential) givenness is trivial: even if there are event tokens in the previous context that make sure the target ACC-*ing* has an instantiation, ACC-*ing* does not refer to that token (or to anything else). For example, with Clay’s win in the discourse, the ACC-*ing* complements are not used as anaphors:

- (19) Clay won the game yesterday, but
 - a. many people did not see him winning the game.
 - b. many people did not enjoy/celebrate him winning the game.
 - c. many people did not remember him winning the game.

ACC-*ing* does not refer to the win that is reported in the first sentence, even though intuitively, the speaker continues talking about it. (19a) means that for many people, there is no token of the kind *him winning the game* that they saw; the same goes for (19b-c). Comparing these examples with definite descriptions in *Many people did not remember this event/his win/his winning the game*, it is obvious that definite descriptions, including POSS-*ing*, are more closely linked to the winning event.

In summary, not seeing ACC-*ing* as a nominalization and a special case of NP + V-*ing*, and treating all the relevant NP + V-*ing* structures as event kind descriptions, helps us avoid the complicated situation that I faced when collecting ACC-*ing* data. We may recall those studies on nominalizations that ignored ACC-*ing*, such as Vendler (1967b), Peterson (1997) and Zucchi (1993): although the choice of not including ACC-*ing* was not explicitly justified in their studies, we could imagine it being a carefully made decision.

6.3. A DRT analysis of ACC-*ing*

The semantic interpretation of ACC-*ing* as an event kind description does not immediately makes it non-referential. In this section, referentiality is represented by the existence of a discourse referent in DRT. By being non-referential, ACC-*ing* does not introduce a discourse referent or refer back to one.

I adopt the proposal of thematic arguments in Farkas and de Swart (2003) to represent descriptive content without reference in DRT. Their proposal was initially intended for nouns that are incorporated in VPs. In the following example in Hungarian, the noun *verset* does not refer to specific entities, nor does it suggest one single poem or multiple ones. The sentence is similar to *Peter is poem-reading* in English.

- (20) Péter verset olvas.
 Peter poem.ACC read
 ‘Peter is reading a poem/poems/poetry.’
 (Farkas & de Swart, 2003, p. 96)

In traditional DRT, there needs to be a discourse referent that serves both as the argument of the noun *poem*, and as an argument of the predicate *read*. However, we do not want a full-fledged discourse referent for such non-referential expressions. Thematic arguments precisely serve this purpose: they appear as arguments of conditions in the DRS without being a discourse referent. The following DRS represents (20): there is an event referent and a referent for Peter; the variable *z* helps linking the noun *poem* to the verb *read*, but is not a referent itself.

- (21)

u, e
Peter(u)
poem(z)
read(e, u, z)

Readers are encouraged to consult Farkas and de Swart (2003) for technical details. In the case of ACC-*ing*, a thematic argument replaces the event argument of the *-ing* verb, and is taken as an argument by the main

predicate. The following DRS represents *Hannah remembered Clay playing the game*.

(22)

u, v, w, e
Clay(u)
game(v)
play(z, u, v)
Hannah(w)
remember(e, w, z)

Since there is no event referent corresponding to *Clay winning the game*, it is interpreted as an event kind; this DRS should translate to a representation similar to (13). Subsequently, it may appear as an entailment of *remember* and the past tense that there is an event token corresponding to *Clay winning the game*.

This DRS treatment differs from that of Asher (1993) (see Section 1.1.3) in various aspects. Notably, I do not introduce a subDRS for *ACC-ing*. For Asher, *ACC-ing* contains an IP structure which introduces subDRSs, but I do not assume here a specific syntactic analysis and wish to accommodate those analyses of NP + V-*ing* as VP or small clauses. It is, of course, possible to represent *ACC-ing* in a subDRS, similar to Asher’s treatment of *that*-clauses:

(23)

	w, e				
	Hannah(w)				
remember(e, w,	<table border="1"> <tr> <td>u, v</td> </tr> <tr> <td>Clay(u)</td> </tr> <tr> <td>game(v)</td> </tr> <tr> <td>play(z, u, v)</td> </tr> </table>	u, v	Clay(u)	game(v)	play(z, u, v)
	u, v				
	Clay(u)				
game(v)					
play(z, u, v)					
)					

Most importantly, this subDRS should not characterize a possibility or fact referent, so that *ACC-ing* stays non-referential. In (23), however, it is not the thematic argument *z* which serves as the complement of *remember*, but the subDRS (probably turned into an entity). In my analysis, it is assumed that the predicate selecting *ACC-ing* has direct access to the event kind argument.

6.4. ACC-*ing* with narrow containers

One may have noticed that my analysis in this chapter does not prevent narrow containers from taking ACC-*ing*. Among Vendler’s narrow containers, we already see that temporal prepositions and perception verbs (or any container that takes a nominal in its object position) actually take ACC-*ing* or similar structures, but eventive predicates and manner adjectives seem to remain incompatible with ACC-*ing* as their subject:

- (24) a. *Clay killing the dragon happened yesterday on the island.
 b. *Clay killing the dragon was skilful.

These predicates, like temporal prepositions, need to be interpreted in relation to an event token. However, if prepositions can contain a realization relation (2), it is unclear why these predicates cannot. For example, (25a) is the predicate SKILFUL as it commonly selects an event token. If it finds an event kind as its argument, it may instantiate that kind before applying to the resulting token (25b). This is essentially how Carlson (1977) expects that predicates applying to temporally bound objects (“stage-level predicates”) combine with kinds. Why is (25b) impossible?

- (25) a. $[[\text{skilful}]] = \lambda e[\text{SKILFUL}(e)]$
 b. $[[\text{skilful}]] = \lambda P, e_k[P(e_k) \wedge \mathbf{R}(e, e_k) \wedge \text{SKILFUL}(e)]$

The explanation that ACC-*ing*, like definite singular kinds, does not allow access to its tokens (which I assume in Section 1.2.2) no longer works, since *with* and temporal prepositions are allowed such an interpretation. This phenomenon is likely associated with the subject position. Both in Portner (1992) and in studies about clausal nominalization (such as Kastner, 2015 and Moulton, 2020), the subject position is argued to carry a factive presupposition. However, knowing that *Clay killing the dragon* is guaranteed to have a token or to be familiar in the discourse of (24) does not explain why such sentences are unacceptable.

Speaking of ACC-*ing* in the subject position, we can turn to loose containers for a moment. In both the examples below, the event kind described by ACC-*ing* is not instantiated.

- (26) a. Clay killing the dragon was likely/probable/possible.
b. Clay killing the dragon surprised me/was surprising.

Loose containers can be used in the past tense and even appear as an episodic sentence (*surprised me*), but it is important to notice that both sentences still express some kind of generalization. An event kind being possible does not depend on properties of its tokens, but on the kind itself. This is also related to what has been claimed to be the opacity of verbal gerunds: if *Clay killing the dragon in two minutes* surprised me, it is not necessary true that *Clay killing the dragon* also surprised me. Therefore, one can say that there is a generalization that holds in virtue of the descriptive content of the ACC-*ing*.

Now, with narrow containers, the sentence cannot be a generalization: if (24b) holds, it is because of a particular token of the *Clay killing the dragon* type, rather than the descriptive content of the kind. Grimm and McNally (2015) have used a similar argument, claiming that such sentences only have a generic reading which is pragmatically implausible.

What if a narrow container is used intentionally to make an existential assertion? (24b) would assert that there was an instance of Clay killing the dragon and it was skilful. The fact that such a reading is unavailable is reminiscent of a prohibition on some nouns as subjects of copular locative sentence with an intended existential reading. For example:

- (27) a. There are holes in the wall.
b. *Holes are in the wall.

Szekely (2015) argues that holes, unlike most entities, are “existentially dependent”: holes are not things that simply exist in the world, but are dependent on their relation with another entity (that contains a hole). Maybe ACC-*ing* is similar in depending on other referents or events; since it is non-referential, it always depends on the main clause event when it serves as a complement. I do not have a good explanation, but these phenomena point to a new direction in the study of nominals, where the traditional explanation for narrow containers has always been ontological distinctions and selectional restrictions.

Since this thesis makes a commitment to verifying linguistic predictions through real-world data, I believe that we could benefit from first confirming that examples like (24) are actually unacceptable in English. Here I report an experiment that was part of a study in order to examine the potential effect of temporal modification on verbal gerunds (Huang, to appear), which also showed a difference in the acceptability of verbal gerunds with narrow containers.

I designed an acceptability judgment task⁵ with two independent variables: type of gerund (POSS-*ing*, ACC-*ing*, nominal gerund) and modifier (no modifier or with temporal modifier) which produced 6 conditions, as illustrated by (28):

- (28) {George’s performing/George performing/George’s performing of} the song {∅/three days ago} took place in public.

To create the test items, I used 12 lexical combinations consisting of a narrow container in the past tense as matrix predicate and a gerund based on an accomplishment predicate, where the subject of the gerund was a personal proper name and the object was a definite singular NP. Every lexical combination was presented in all 6 conditions and distributed in 6 lists according to a Latin square design, so that each lexicalization appeared in each list in exactly one condition, and each list contained 2 items for each condition. 5 practice items and 12 fillers that were similar to the test items were used in all the lists. Each of them had an NP or a gerund starting with a personal proper name as subject, and the matrix predicates showed more variety than those in test items. Participants were asked to rate each sentence on a 7-point Likert scale, with 1 representing “unacceptable” and 7 “acceptable”.

60 self-reported native speakers of English, located in the USA and the UK, were recruited from Prolific. Each list was completed by exactly 10 participants and none of them was excluded after examining their performance on fillers.

⁵The material and the original data of this experiment can be found at <https://osf.io/pbhyt/>.

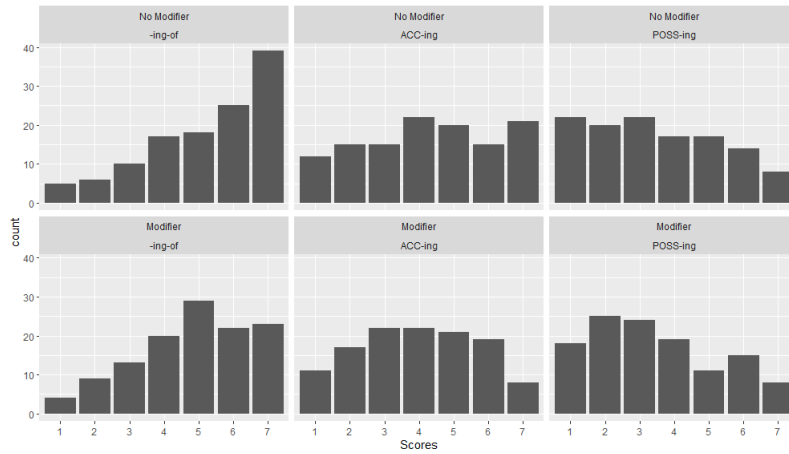


Figure 6.1: Distribution of data points in each condition

Figure 6.1 shows the distribution of all the data points across 6 conditions. Every condition contains 120 data points. As event-denoting expressions, nominal gerunds (marked as *-ing-of* in the figure) are compatible with narrow containers as predicted, either without ($M = 5.23, SD = 1.75$) or with temporal modifiers ($M = 4.83, SD = 1.65$). *POSS-ing* (without modifier: $M = 3.51, SD = 1.86$; with modifier: $M = 3.48, SD = 1.82$) and *ACC-ing* (without modifier: $M = 4.27, SD = 1.92$; with modifier: $M = 3.95, SD = 1.73$) score lower and show higher variation.

A Cumulative Link Mixed Model was fit to the data with type of gerund and modifier as independent variables, with random intercepts for participant and item, as well as random slopes for type of gerund and modifier. The results indicate a significant overall effect of temporal modification ($z = -2.25, p = 0.025$) which is negative, with an estimate of -0.376 . Negative estimates are associated with lower judgments of acceptability and positive estimates with higher judgments of acceptability. The type of gerund also shows a significant effect: taking the nominal gerund as reference, the effect of *ACC-ing* has an estimate of -1.337 ($z = -4.812, p < 0.001$), and *POSS-ing* has an estimate of -2.240 ($z = -8.314, p < 0.001$). Pairwise comparisons between the three types

of gerund indicate that they are all different from one another. A likelihood ratio test was performed to compare the current model with one that takes into account the interaction between type of gerund and modifier. Results indicate that said interaction does not significantly improve the model ($\chi^2(2) = 3.348, p = 0.19$).

It is of no surprise that temporal modification has no positive effect on the eventive use of verbal gerunds, but two things can be noticed from the experiment: first, the acceptability of verbal gerunds is towards the middle of the scale, suggesting that speakers might still accept the use occasionally; second, although neither *POSS-ing* nor *ACC-ing* is as acceptable as nominal gerunds, the data contradict Asher’s (1993) intuition that *POSS-ing* is partially acceptable with eventive predicates but *ACC-ing* never is. *ACC-ing* actually fares better with eventive predicates than *POSS-ing*.

On the first point, it is possible that ontology is not encoded as deep in the language as grammatical rules and as a result speakers do not feel as strongly about ontological conflicts. The second point involves several considerations. One possibility is that when judging *ACC-ing* items, some participants subconsciously added commas before and after the gerund, making them felicitous sentences with a free adjunct:⁶

(29) Dave*(,) writing the letter*(,) was meticulous.

This interpretation should be avoided if accusative pronouns are used instead of proper nouns.

It is also possible that *ACC-ing* is generally more acceptable than *POSS-ing*. In a pilot study, I took original sentences with *POSS-ing* from BNC, replaced the target phrase with a blank space, and asked participants to choose from the original *POSS-ing*, the corresponding *ACC-ing*, and “both are possible”, as the following example shows:

⁶Most of the test items in this experiment have a matrix predicate that accepts human subjects: *take* (time), *begin/finish at* (time), *be fast/slow/sloppy/meticulous*, *go fast/slowly*. Two test items use *take place* (at a location), which is incompatible with human subjects, but the scores for these two items in *ACC-ing* conditions are not lower than *POSS-ing* conditions.

- (30) Does ____ now mean that I am a little bit reconciled to myself?
- me writing this down
 - my writing this down
 - both are possible

Native speakers seem to prefer ACC-*ing* even if the original sentences use POSS-*ing*. This may be attributed to the higher frequency of NP + V-*ing* constructions, and less requirements for it to be anchored in the context.

In view of the current thesis, ACC-*ing* is more likely than POSS-*ing* to take on a kind reading that quantifies over token events. Actually, the use of ACC-*ing* with eventive predicates can be sporadically attested on the Internet. (31) is uttered by a native speaker of British English⁷ and (32) is found in a blog.⁸

- (31) There is only one way out of this dimension and it's either her or me dying. And although *me dying* has happened a few times now...

- (32) *Leaves turning brown* often occurs when the plant receives too much direct sunlight or is getting too hot.

Such examples are not predicted by the literature but support my analysis based on even kinds. (31) suggests a few occurrences of *me dying* using the predicate *happen*, which in principle should not be acceptable. However, considering how *my death* and *my dying* both hint towards one particular death that the speaker experiences, the pluractional use seems to fit ACC-*ing* better. It is strange to use the singular *my death* in this case because the same death cannot happen multiple times, and even the plural *my deaths have happened a few times* has the same problem. ACC-*ing*'s lack of referentiality makes it possible to happen many times, each time involving a different token. (32) is a quantification over situations in which the plant is in unfavorable conditions.

Do such examples suggest that ACC-*ing* should be compatible with

⁷https://www.youtube.com/watch?v=c_1DMDwenm0&t=451s

⁸<https://www.avoseedo.com/avocado-plant-problems-troubleshooting-and-resolving-common-issues/>

happen and *occur*? (32) provides information about the ACC-*ing* as a kind, but (31) is not far from an existential assertion. Narrow containers—the very data that started the ontological discussion about nominals—continue to be an enigma awaiting resolution.

Chapter 7

CONCLUDING REMARKS

I have attempted to answer two research questions in this thesis. The first one is a question of natural language ontology: given their distribution in the corpus, what ontological objects do these verbal gerunds denote? The second one is, how do they differ in their meanings? My answer to the first question is that *POSS-ing* has more temporal properties than assumed in the literature and can be modeled as a Kimian state, an abstract object with temporal location. *ACC-ing* is non-referential, and can continue to be analyzed as event kind descriptions. For the second question, I have examined the use of two verbal gerunds in various aspects, such as their distribution and discourse functions, and concluded that their biggest difference lies in their referentiality.

As a basis for answering these questions, this thesis is, first and foremost, a case study in natural language ontology using corpus data. This methodology is consistent with the principle that ontological analyses should find their evidence in the use of natural language. The use of corpus data has several advantages over the traditional introspection: first, the data are unbiased by the ontological assumptions of the linguist; second, the target phrases can be examined comprehensively throughout different syntactic positions that they appear in instead of focusing on subjects and objects, uncovering phenomena that are potentially overlooked; third, the collection of data, along with their contexts, facilitates the description of

verbal gerunds beyond their containers, extending to their behavior in the discourse.

Indeed, my collection of gerunds from BNC has been the principal source of data throughout this thesis. My *POSS-ing* collection, even though not exhaustive, was collected from the whole BNC and is larger than any collection reported before; my *ACC-ing* collection also covers texts from every genre in BNC. I was able to compare the distribution of *POSS-ing* and *ACC-ing* with the narrow container data, which have been the foundation of many ontological claims. Despite some exceptions, *POSS-ing* was found to be consistent with the description in the literature. What was unexpected from this methodology was the difficulty to identify “typical *ACC-ing*” from other structures attested by the same search pattern. This turned the focus from narrow container to loose containers and made me ask: what predicate do (instead of do not) take verbal gerunds? I was initially able to distinguish *ACC-ing* using syntactic tests in order to facilitate data collection, but eventually claimed that it is most convenient not to distinguish a nominalization called *ACC-ing* from other similar structures. With the help of corpus data, I was able to focus on specific contexts of *POSS-ing* such as *with* and *without* and temporal prepositions, which have been overlooked in the literature but are crucial throughout this thesis.

My use of corpus data also has several limitations. First, my data only represent the use of verbal gerunds in BNC, which is restricted to British English and does not cover the most recent language use. Second, the data collection was based on a certain dependency parsing. *ACC-ing* was limited to those constructions in which the *-ing* form was parsed as the head. This could lead to a subset of data being systematically ignored. Despite these concerns, the distribution of verbal gerunds in my collection is similar to previous studies. Third, one cannot conclude from (the lack of) corpus data that a certain use is unacceptable; it may be rare or may need a very specific context. Likewise, it is difficult to decide if an unexpected use is acceptable in English when sporadic examples are attested. This last limitation can be overcome with the help of experiments, where the exact phenomena can be tested with native speakers.

In general terms, the biggest challenge in the use of corpus data for ontological analyses is the intricate nature of the data. As I have mentioned, exceptions can often be found regarding restrictions on the combination of gerunds and containers. As one attempts to analyze the ontological implication of different containers, one needs to first explain what these predicate do—which extends to words as essential to our ontology as *happen*. I find many predicates difficult to describe, as the verbs themselves need a full semantic account before deciding whether being their argument should be considered an “eventive” property, or is acceptable for abstract entities. In comparison to ontological categories like individuals, properties, events and propositions, which have been widely recognized and differentiated by our daily use of language, a question worth asking is: do the subtle differences between event-referring expressions and expressions like verbal gerunds—which make reference to some conception of events but do not directly denote events, and at the same time are much rarer in our use of language—really exist in our cognition? And how essential are they for the ontology and language, beyond selectional restrictions?

I also believe that ontological studies may eventually benefit from computational methods. The basic methodology of natural language ontology is to observe the actual language use; in the case of verbal gerunds, we observe the predicates in their immediate context. This coincides with the principle of distributional semantics: the meaning of a word is represented by measuring the words in its context. Presumably, the ontological status of different constructions can also be measured and compared in this way with a large enough collection of data.

The other theme of this thesis is referentiality, although it is not brought out until late stages of my research. The discourse annotation task that I carried out shows perfectly how referentiality is related but not correlated to factivity (token inference) and discourse givenness. I identified the factivity and familiarity presuppositions from Portner (1992) as referentiality. This helped me extend the concept of ACC-*ing* to include most NP + V-*ing* structures in which the -*ing* form is not a post-modifier of ACC-*ing*; the idea of ACC-*ing* as a specific subset of NP + V-*ing* structures and

a nominalization was abandoned.

Apart from the apparent contrast between having a genitive subject and an accusative one, and their behavior in syntactic tests, it is still difficult to pinpoint the differences between *POSS-ing* and *ACC-ing* in their meaning and use. *POSS-ing* and *ACC-ing* share most of the contexts and, despite asymmetries like what I observed in the case of *with(out)*, the two are interchangeable most of the time. Further research, especially through experiments, is necessary to determine how speakers choose between the two verbal gerunds in English.

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