

Nominalization and Natural Language Ontology

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Keywords

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Abstract

Nominalization (e.g., *sleeping*, *that we slept*, *sleepiness*) allows speakers to refer and ascribe properties to whatever sorts of entities clauses, verbs, or adjectives typically denote. Characterizing these relatively abstract entities has challenged semanticists and philosophers of language for over 50 years, thanks especially to Zeno Vendler's early work. Vendler took different kinds of English nominalization constructions to support positing facts, propositions, and events as distinct ontological objects. However, his conclusions remain controversial. The research on nominalization and natural language ontology has never been brought together or put into perspective; in this article, we clarify the complex variety of subsequent ontological positions that build on Vendler's work, identifying points of consensus and disagreement. We also reflect on the consequences and challenges of focusing on the English data and offer a glimpse of how the landscape might change with greater attention to nominalization in other languages.

1. INTRODUCTION

Nominalization (e.g., *sleeping, that we slept, sleepiness*) allows speakers to refer and ascribe properties to whatever sorts of entities clauses, verbs, or adjectives typically denote. Characterizing these relatively abstract entities has challenged semanticists and philosophers of language for over 50 years, thanks especially to the early work of Zeno Vendler (1967a,b, 1968). Vendler stands out among twentieth-century philosophers as an adapter of a strongly empirical methodology in support of philosophical arguments about ontology: He posited that we distinguish among different sorts of entities in the way we talk about them. This led him to look extensively at different kinds of nominalization constructions in English. Among his contributions was support for facts as genuine ontological objects, distinct from, and yet related to, events, on the one hand; and propositions, on the other.

Vendler's research influenced not only philosophers but also linguists interested in understanding why such a plethora of nominalization constructions exists, what explains the differences between them, and more specifically within natural language semantics, what their implications are for natural language ontology. However, the conclusions of Vendler's research have remained controversial. Linguistic research into these data has happened in fits and starts, with distinct and somewhat disconnected traditions in syntax and semantics, among other reasons because some of the data are challenging to collect and evaluate.

The research on nominalization and natural language ontology now spans 50 years but has not been brought together or put into perspective. Here we do precisely this, focusing, for reasons of space, specifically on work that has drawn most directly on Vendler's legacy. This will allow us to put some order in the sometimes bewildering array of ontological positions and identify what researchers agree on and where the main points of difference remain. It will also allow us to reflect on Vendler's decision to focus on English data—the strengths, limitations, consequences, and challenges of such an approach—and to offer a brief glimpse of how the landscape might change with further study of the semantics of nominalization in other languages.

2. VENDLER: CONNECTING NOMINALIZATIONS AND ONTOLOGY

Vendler's investigation of nominalizations spans three works: *Adjectives and Nominalizations* (Vendler 1968), chapter 5 of *Linguistics in Philosophy* (Vendler 1967b), and "Causal relations" (Vendler 1967a). These build on each other, and despite falling short of being entirely consistent with one another, together provide a broad characterization of different types of nominalizations and the contrasting ontological objects (*viz.* events, propositions, and facts) to which Vendler attributes their differing grammatical behavior.

Adjectives and Nominalizations (Vendler 1968), although last to appear, was the first to be written and is the starting point for all of the works we review here. Its methodology is informed by the unique historical context in which Vendler carried out the studies: It combines ordinary language philosophy *à la* Austin or Strawson with Zellig Harris's structuralism and use of morphosyntactic transformations as a way to characterize language structure. It is a curious work, essentially descriptive and analytic notes without any bibliography or even a clear statement of purpose.

Vendler (1968, p. 11) sets out his definition of nominalization in the first sentence: "Certain transformations unite two sentences into one." He then focuses for most of the work on cases in which one sentence is incorporated into another without the two sharing a common nominal component.¹ This process he refers to as proper nominalization. The rest of the section on

¹The latter occurs, for example, when a relative clause is combined with a noun in a sentence.

nominalization is an initial description of (a) the range of forms nominalizations take, (b) the containers they appear in (the container being the predicate that the nominalization combines with), and (c) the cooccurrence restrictions between the two. What gives the work added value, and made it relevant for much work in linguistics and philosophy of language afterward, is the way Vendler used the data to gain insight into natural language ontology for events, facts, and other abstract objects, for which he more extensively argued in *Linguistics in Philosophy* (Vendler 1967b, chapter 5) and “Causal Relations” (Vendler 1967a).

Vendler’s definition of nominalization includes a very broad class of expressions: core types of nominalizations familiar from the subsequent literature, such as deverbal nominals (*arrival*), so-called nominal gerunds (*the/their singing of the song*), and so-called verbal gerunds (*our/Robin’s reading the book*),² as well as a range of other constructions, including *that*-clauses (*that they left*), *wh*-clauses (*whether they left, what they lost*), naked or bare complements (*I heard **them sing***), and infinitival clauses (*I asked **them to do the job***).³ However, subsequent literature on nominalization and natural language ontology, with the notable exception of Asher (1993), has typically focused on just subsets of these, with the *-ing* constructions being perhaps the most controversial and widely discussed.

Vendler asserts that nominals can be either incomplete or complete. Incomplete nominals involve component sharing (i.e., correspond to constructions like *I started singing* or *I want to sing*, where *I* is both the subject of the main clause and the understood subject of the nominal). Complete nominals do not involve any component sharing between the nominal and the container; they include a variety of expressions from *that*-clauses to deverbal nominals such as *arrival*. The complete/incomplete distinction has not figured visibly in the natural language ontology literature, and syntactic studies on related data have varied, some focusing on the problem of the component sharing (cf. the literature on so-called control and raising constructions, e.g., Polinsky 2013), others focusing on the full set of uses of specific forms (e.g., *-ing* forms as discussed in the diachronic constructionist literature mentioned in Section 5.1 below).

Vendler argues for a further distinction between imperfect and perfect nominals that has remained central to the analysis of nominalizations ever since. An imperfect nominal retains much of the syntax of the verb phrase taken to be the source of the nominalization (e.g., adverbial rather than adjectival modification, direct rather than *of*-marked complements), while a perfect nominal has all of the characteristics of a noun (adjectival instead of adverbial modification, *of*-marked rather than direct complements, incompatibility with negation and auxiliary verb constructions); contrast examples 1 and 2:⁴

- (1a) their singing the Marseillaise beautifully
- (1b) their (not) having sung the Marseillaise

²The different sorts of verbal gerunds have come to receive more specific names in the broader nominalization literature: PRO- or VP-*ing* for those with no overt subject (*writing novels*); ACC-*ing* for those with an accusative case (or objective case) subject (*him leaving home*); and POSS-*ing* for those with a possessive (genitive) form subject (*their leaving home*). Note that we use the term subject purely descriptively without any commitment to its correct grammatical analysis.

³The syntactic analysis of particularly the nonfinite constructions listed here has generated a large literature. We are not concerned with these or their syntactic details in what follows and refer the interested reader to, for instance, Huddleston & Pullum (2002) for a general descriptive overview, to Lowe (2019) for a more theoretical perspective, and to the references cited in these works.

⁴We mark expressions we consider infelicitous or ungrammatical with double question marks (??). When examples from the literature have used asterisks (*) to mark unacceptability of any sort, we reproduce this marking.

- (2a) the beautiful singing of the Marseillaise
- (2b) ??the having sung of the Marseillaise
- (2c) ??the not singing of the Marseillaise

Vendler’s (1968, p. 31) definition of containers is also quite general: “[a] sentence with a noun-gap suited for a nominal,” for instance, *__ is unlikely* or *__ lasted an hour*. Like his original notion of nominalization, this definition is wider than the definitions that have been used in most later work. For instance, it includes complement-taking verbs in general, including control and raising verbs (again, see Polinsky 2013).

While Vendler’s treatment of containers is initially structural, he quickly notes that the semantics of the selecting predicate is crucial and that the selectional restrictions of the containers differentiate among the types of nominalizations: “container sentences are selective hosts: open to a sentence nominalized in one way, they may refuse the same sentence when nominalized in another way” (Vendler 1967b, p. 125). A central example of this, and some of the most striking and widely discussed data, involves containers that distinguish *POSS-ing*, on the one hand, from nominal gerunds and deverbal nominals, on the other. Many containers may accept multiple types of nominals, as with *__ surprised us* in example 3, and are thus termed loose containers (Vendler 1968, p. 75). However, others, especially containers that describe temporal, spatial, and certain manner-related properties of events, are typically compatible with nominal gerunds and deverbal nominals, but not with *POSS-ing*, as shown in examples 4a and b, and are thus termed narrow containers (Vendler 1967b, p. 132).⁵ This methodology also leads Vendler to categorize *that*-clauses and *POSS-ing* nominals together, as they generally occur in the same set of containers:⁶

- (3) The dog’s running away/That the dog ran away surprised us.
- (4a) The president’s speech lasted for an hour/occurred at noon.
- (4b) ??The president’s speaking/That the president spoke lasted for an hour/occurred at noon.

Vendler (1968) makes the following influential claim: Narrow containers are only able to host perfect nominals and not imperfect ones, while loose containers are “suited for” imperfect nominals, yet still may “tolerate” perfect nominals. Further observations are added in *Linguistics in Philosophy* (Vendler 1967b). First, when perfect nominals are “tolerated,” as in example 5a, this is not innocent, but typically involves reinterpretation as appropriate to an imperfect nominal, as indicated by the rephrasing in example 5b. In particular, he observes that when a deverbal nominal (*the collapse of the Germans*) is placed in a loose container, it is equivalent in interpretation to a counterpart with a *that*-clause or *POSS-ing*; contrast examples 5 and 6 (adapted from Vendler 1967b, p. 132):

- (5a) The collapse of the Germans is unlikely.
- (5b) ⇒ That the Germans will collapse is unlikely.
⇒ The Germans’ collapsing is unlikely.
- (6a) The collapse of the Germans was gradual.
- (6b) ⇏ That the Germans will collapse was gradual.
⇏ The Germans’ collapsing was gradual.

Second, the ability of perfect nominals to inhabit loose containers is not absolute, and Vendler notes that as more material is added to the perfect nominal, it is less tolerated by the loose container, as shown in examples 7a–c (drawn from Vendler 1967b, p. 133):

⁵Vendler (1968) refers to these as tight containers; however, the term narrow has persisted.

⁶Vendler, perhaps surprisingly, does not discuss *ACC-ing* nominals in such contexts.

- (7a) The singing of the Marseillaise is unlikely.
- (7b) ?The beautiful singing of the Marseillaise is unlikely.
- (7c) ??John's beautiful singing of the Marseillaise is unlikely.

In *Adjectives and Nominalizations*, Vendler (1968) does not significantly engage with ontological questions underlying the varieties of nominalizations. However, he builds on the data and methods from this work in both *Linguistics in Philosophy* (Vendler 1967b, chapter 5) and “Causal Relations” (Vendler 1967a) precisely to influence ontological debates in ordinary language philosophy concerning the status of, and means of distinguishing, (concrete) objects, events, propositions, and facts. Most relevantly, Vendler leverages the observations about the selectional restrictions of containers to argue for distinguishing events and facts. He points out that the words *fact* and *event* fit together with the loose and narrow containers just in the way that imperfect and perfect nominals do, thus providing an “indirect proof” that imperfect nominals correspond to facts while perfect nominals correspond to events. In *Linguistics in Philosophy*, Vendler (1967b, chapter 5) adds further remarks on distinguishing characteristics of these different ontological types. Objects, as opposed to events, do not appear to be located in time—at most, their existence is located in time. Conversely, he argues that events are located only in time, not space. Facts are located in neither; in “Causal Relations” (Vendler 1967a) he clarifies that he considers facts to form a family with propositions, a point to which we return in Section 4.1.⁷

Vendler’s argumentation is impressive not only in its detail but also in how naturally his conclusions appear to follow. English has different nominalization patterns because its speakers have a need to talk about different ontological objects. As researchers delineate the grammatical patterns, they gain clarity into the ontological grounds of the shared system of communication. This general line of argumentation is strengthened and refined in subsequent research, as we discuss in Section 3. However, while there is wide agreement concerning deverbal nominals, nominal gerunds, and *that*-clauses, there is much less agreement on POSS-*ing* nominalizations and other verbal gerunds (see Section 4.1). This is, in our estimation, due to the fact that the researchers who would revise, expand, or restrict Vendler’s ontology build to a surprising extent on complementary sets of data; to complicate matters, judgments concerning the data are neither static nor consistent (see Section 4.2). The situation highlights a dire need for a clearer, more reliable empirical picture, as we discuss in Section 5.

3. VENDLER’S HERITAGE: CORE CLAIMS, EXTENSIONS, REFINEMENTS

Vendler offered researchers on nominalization an empirical methodology and an ontological proposal. Both have been adopted and expanded upon, at least in the general outlines, even if the particulars, especially in the ontology, remain controversial. Broadly speaking, different researchers have taken their motivation from different facets of Vendler’s program. Some have started from the distributional data and worked toward an ontological treatment (we situate Zucchi 1993, Grimm & McNally 2015, and Portner 1992 in this category); others have been driven by ontological or philosophical interests and approach the data in light of these (examples include Asher 1993, Hamm & van Lambalgen 2003, and van Lambalgen & Hamm 2005; and here, too, we would situate Portner 1992). In this section, we highlight some points of consensus

⁷Whether facts exist at all, and if so, what type of entity they are, has been controversial in the philosophical literature (see, in addition to the comments in Section 4.1, Mulligan & Correia 2020, Betti 2015, and Kratzer 2002 for a range of different perspectives and additional references).

among various accounts of nominalizations and natural language ontology in the Vendlerian tradition, and signal key efforts to extend or refine Vendler's original proposal.

Perhaps the clearest points of agreement in this literature are (*a*) that both events and propositions are necessary ontological objects, (*b*) that deverbal nominals and nominal gerunds designate events,⁸ and (*c*) that *that*-clauses designate propositions. A further matter of consensus is that nominal gerunds and deverbal nominals may have something other than an eventive interpretation in certain contexts, as discussed with reference to examples 5a and b. However, whether nominal gerunds are truly ambiguous, and, if they are, what the noneventive interpretation is, remains unresolved.⁹

The contrast between events, on the one hand, and propositions, on the other, has been strengthened by subsequent developments in the literature. Zucchi (1993, pp. 189–90) provides data indicating that when serving as complements to verbs of cognition, emotion, or perception, derived nominals and nominal gerunds refer to events as distinct from propositions.¹⁰ His argument is made using sentences like those in example 8. Example 8a, with a deverbal nominal complement, strongly implies that what John remembered, noticed, or saw was something he witnessed, that is, an event. In contrast, example 8b, with a *that*-clause, only requires that John remember, notice, or see (in the sense of 'understand') the information that Mary arrived, information which, for instance, could be obtained second-hand:

- (8a) John remembered/noticed/saw Mary's arrival.
- (8b) John remembered/noticed/saw that Mary arrived.

These predicates, then, indicate that it is not to be taken for granted that deverbal nominals and nominal gerunds are routinely able to deliver on their own both an eventive and a propositional interpretation, contrary to what examples 5 and 6, above, might suggest.

Negated nominals offer further evidence that different sorts of nominalizations refer to eventive and propositional objects. Building on observations from Cresswell (1979) and Kaiser (1978), Bäuerle (1987) considers data such as examples 9a and b:

- (9a) The nonarrival of the train surprised us.
- (9b) It surprised us that the train did not arrive.
- (10a) *The nonarrival of the train occurred at noon.
- (10b) The arrival of the train occurred at noon.

Bäuerle (1987) argues that example 9a is synonymous with example 9b, and thus nominalizations negated with *non-* are propositional, not eventive. Further, negated nominalizations do not felicitously occur with narrow containers, unlike their positive counterparts, as shown in examples 10a and b, respectively. From the perspective of Vendler (1967a, 1968), this is puzzling,

⁸There are some disagreements among different researchers as to what events are. In particular, those who work within Kratzer's (1989) situation semantics framework do not take events to be primitive in the tradition of Davidson (1967) but rather argue that they correspond to minimal situations (Zucchi 1993) or concrete situations (Portner 1992). In the context of our discussion in this section, these differences are not crucial, though we return to them in Section 4.1.

⁹Note that certain such nominals can have other interpretations (e.g., describing physical objects or result states) that are not directly relevant to the ontological questions that concern us here (for a particularly detailed discussion, see, e.g., Lieber 2016).

¹⁰Though referencing Vendler, Zucchi does not explicitly distinguish propositions from facts in this discussion, but it is clear that he considers facts to be proposition-like objects.

as *arrival* is a perfect nominal and yet its negation is an imperfect nominal. Zucchi (1993, pp. 184–89) accepts these data and interpretations while arguing that by themselves they do not invalidate treating deverbal nominals such as *arrival* as denoting simply a set of events; instead, he locates the complexity in the lexical entry of *non-*, which he takes to map properties of events to properties of propositions.¹¹

Using the data from verbs of cognition and negated nominals, Zucchi (1993) carefully investigates the claim that deverbal nominals and nominal gerunds are ambiguous between eventive and propositional readings. He argues that while there is some evidence for ambiguity, no argument presented in the literature is without problems; indeed, he observes that there is actually conflicting evidence. Although a strong argument for ambiguity comes, for example, from the nonsubstitutability of extensionally equivalent deverbal nominals in intensional contexts (Zucchi 1993, p. 193),¹² a strong argument against ambiguity comes from the possible interpretations in the complement position to verbs such as those in examples 8a and b. Zucchi briefly contemplates the possibility that the nominal is unambiguous and that pragmatic factors intervene to explain the data; however, as we discuss in Section 4.2, he eventually opts for an ambiguity analysis. We consider this area ripe for reassessment in light of more recent work on interpretation in context (see, e.g., Asher 2011 and references therein).

Vendler's methodology has also been used to argue for ontological objects beyond those he originally contemplated. Asher (1993) examines the compatibility of different nominals in other sorts of predicate containers to argue for possibilities, an ontological type distinct from propositions and facts in Asher's system. Asher claims that the data in examples 11a and b distinguish possibilities both from propositions (referred to by *the claim that...*) and from facts (referred to by *the fact that...*). Of the three types, only possibilities can be feared; in contrast, claims (and accordingly propositions), but not possibilities, may be believed:

- (11a) John feared {the possibility/?the claim/?the fact} that Mary had left without him.
- (11b) John believed {?the possibility/the claim} that Mary had left without him.

The use of such data could, when systematically applied, result in a very rich ontology; however, the relevance of constructions such as *the claim/possibility/fact that...* has been explicitly challenged by Bennett (2002) and Betti (2015).

Another case in which Vendler's method has been extended, with implications for ontological claims, involves quantificational readings of VP-*ing* verbal gerunds (discussed in Portner 1991, 1992, but largely overlooked by subsequent researchers).¹³ Portner (1992, p. 97) contrasts the sentences in examples 12a–c, referring to the uses of the gerunds in them as propositional, non-quantified eventive, and quantified eventive, respectively:

¹¹A similar strategy is pursued by Asher (1993, chapter 5), who also recognizes a variant of the problem with POSS-*ing* (*the train's not arriving*), as well as by van Lambalgen & Hamm (2005) in their event calculus framework.

¹²Zucchi's argument is as follows. If *arrival* unambiguously described an event, *Oedipus is informed of the arrival of Jocasta* would, contrary to fact, be equivalent to *Oedipus is informed of the arrival of his mother*, since *Jocasta* and *his mother* refer to the same individual. However, if *arrival* may also describe something propositional, the problem is avoided, since the proposition that *Jocasta arrived* is not identical to the proposition that *Oedipus's mother arrived*.

¹³Nonquantified readings of verbal gerunds and their ontological status are also addressed briefly by Chierchia (1984, pp. 255–66). However, as Chierchia's work was contextualized within a different set of theoretical issues and does not fall within the Vendlerian tradition, we do not discuss it here.

- (12a) Mary denied climbing Savoy Mountain.
- (12b) Mary regretted climbing Savoy Mountain.
- (12c) Mary always enjoyed climbing Savoy Mountain.

In example 12a, *denied* denotes a propositional attitude, and Portner (1992) unsurprisingly proposes that the verbal gerund denotes a proposition in this case. In contrast, example 12b has the interpretation that Mary regretted a single instance of climbing the mountain; Portner argues that it must also therefore be possible to achieve reference to a token event via the gerund. Finally, example 12c involves an adverb, *always*, which Portner analyzes as quantifying over token events of climbing Savoy Mountain. This latter example is particularly relevant because it highlights the fact that verbal gerunds can have an interpretation that is neither clearly propositional nor directly referential to a single token event, alongside interpretations that seemingly alternate between propositional and token event reference. This constellation of data led Portner to a novel ontological proposal, which we discuss in the following section.

To summarize, though the analysis of some types of expressions has remained fairly consistent over time, the literature following in Vendler's footsteps has uncovered an increasingly complex ontological and empirical picture. We now turn to some of the main points of difference that have emerged as this literature has grown.

4. POINTS OF DIFFERENCE

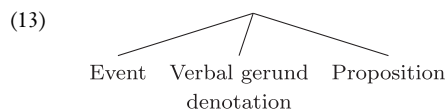
The analysis of verbal gerunds represents perhaps the single biggest challenge in the post-Vendlerian nominalizations literature. Interestingly, the semantic complexities we discuss in this section are mirrored by an independent, and even more extensive, syntactic literature on English *-ing* nominalizations (for early discussion, see Lees 1960, Chomsky 1970, Horn 1975, Schachter 1976; for additional references, see the works discussed in this section and Section 5.1 as well as Lowe 2019).

Syntactically and semantically, verbal gerunds are neither exactly nominal-like nor clause-like. This has made them of central interest to linguists and philosophers interested in natural language ontology. Among the semantic categories that have been proposed for verbal gerunds, we find facts (Vendler; Asher 1993, for some cases), states of affairs (Zucchi 1993), entity correlates of sets of minimal situations (Portner 1992), possibilities (Asher 1993, for other cases), and event types (Grimm & McNally 2015). However, because these proposals are embedded within very different basic ontological assumptions, direct detailed comparison of them is impossible here. We instead offer a higher-level perspective, identifying the differences in the ontological proposals by showing how they relate verbal gerunds and their denotations to the analysis of the other sorts of nominalizations discussed above.¹⁴

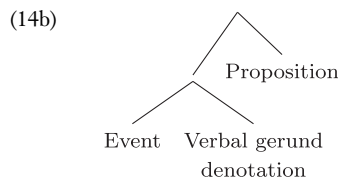
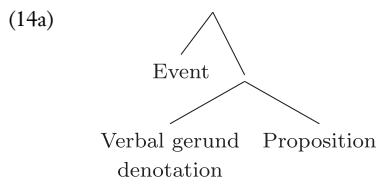
At the most general level, there are three basic options for situating the semantic category of verbal gerunds in relation to events and propositions. First, one might consider verbal gerund

¹⁴The above-mentioned proposed semantic categories for verbal gerunds do not exhaust the options; however, other relevant proposals introduce additional complexities that make incorporating them into our coarse-grained comparison unfeasible here. Chierchia (1984) analyzes verbal gerunds as denoting entity correlates of propositional functions; however, his work does not engage with Vendler and is couched in a property-theoretic semantics that does not explicitly include events in its ontology, making direct comparison with Vendler's proposal and the others mentioned in the text nontrivial. Hamm & van Lambalgen (2003) analyze verbal gerunds as fluents, which they characterize as time-dependent properties. Their work, though inspired by Vendler, is mainly focused on developing a sophisticated event calculus.

denotations as equally distinct from both events and propositions in an ontological inheritance hierarchy, as in example 13, perhaps inheriting features of both:



Second, verbal gerund denotations could be grouped in a subfamily of entities with propositions, as in example 14a. Third, they could be grouped with events, as in example 14b:



The option in example 14a has been explicitly defended by Asher (1993). Example 14b is implicit in a study by Grimm & McNally (2015). Zucchi (1993) and Portner (1992) take positions similar to those illustrated in examples 14a and b, respectively, while still explicitly attempting to capture the seemingly hybrid character of verbal gerunds.

To our knowledge, there has been no comprehensive attempt to compare these different proposals, the different basic theoretical assumptions underlying their specific implementations, their implications, or the sort and quality of the data that have been brought to bear on them. In the rest of this section, we lay the groundwork for such an attempt by reviewing the main theoretical/ontological and empirical considerations that have led to these different positions. In Section 4.1, we contrast the proposals and discuss differences that arise in their formal implementation. Section 4.2 covers the core empirical assumptions that have influenced the different proposals. (Readers primarily interested in empirical foundations of nominalizations may skip Section 4.1 without loss of continuity.)

4.1. Differences in Ontological Underpinnings

As noted, Vendler proposes that verbal gerunds denote facts, as distinct from events. Although his ontology is fairly informal, his comments clearly indicate that he also considers facts to be distinct from propositions, if more similar to them than to events. For example, Vendler (1967a, p. 706) observes that “facts, in the strict sense, will have to be singled out from the motley crowd of other fact-like entities, which are usually called. . . propositions.” Facts are differentiated from propositions in being extensionally transparent. To use his famous example, Oedipus knew (the proposition) that he had married Jocasta, but he did not know (the proposition) that he had married his own mother. However, the fact of marrying Jocasta is intuitively the same fact as marrying his mother, insofar as if one causes something, the other can be said to cause the same thing. Vendler (1967a, p. 710) further observes that “[p]ropositions belong to the people who make or entertain them, but facts are not owned. People have opinions; they conceive, nurture, entertain, or give up beliefs. . . . The facts of the case, however, do not belong to anybody; they are, objectively, ‘there’ to be found, discovered, or arrived at.”

Essentially the same position is adopted, with considerable elaboration, by Asher (1993). He distinguishes eventualities (a term covering both dynamic events and nondynamic states; see Bach 1986) from what he refers to as purely abstract objects; the latter include, on the one hand,

proposition-like objects (including pure and projective propositions—the latter comprised of questions, commands, and desires¹⁵) and, on the other, fact-like objects—not just facts but also possibilities (recall examples 11a and b) and situations/states of affairs. On positing possibilities alongside facts, Asher (1993, p. 29) notes that “the facts of one world are another world’s possibilities.” In other words, a fact must be actual, that is, correspond to a proposition that is true in the actual world, while a possibility need not be. One empirical motivation for this proposal is that verbal gerunds sometimes appear in contexts where they do not identify anything actual, such as in example 15, from the Corpus of Contemporary American English (COCA; Davies 2008):

- (15) ...the cage of stereotypes that prevent **our seeing him fresh and whole**

The notion of possibility has counterparts in other work, and we return to it briefly below. Asher (1993) takes the notions of situations and states of affairs from other philosophical literature¹⁶ but does not treat them in enough detail to permit analyzing his views of them.

Similar empirical considerations lead Vendler and Asher to treat facts as forming a family with propositions; we discuss these in Section 4.2. It is worth observing that neither considers propositions or facts to form part of the world. Asher (1993), in line with Bach (1986), distinguishes between natural language metaphysics and real world metaphysics, and explicitly contemplates the possibility that his category of purely abstract objects belongs only to the former. In this respect, Asher’s ontological maximalism is in the end effectively limited to the domain of the conceptual.

Grimm & McNally (2015, 2016) exemplify the option of grouping the semantic category of verbal gerunds with events, in contrast to propositions. They analyze verbal gerunds as denoting event types (or event kinds, a term they use synonymously), abstract entities that are instantiated by event tokens. Grimm and McNally do not delve deeply into the question of what exactly an event type is; they simply follow the approach in referential semantics popularized by Carlson (1977, 2003) in which types or kinds are modeled as primitive abstract entities.

This appeal to event types is contextualized in a line of work on the syntax/semantics interface, rooted specifically in Zamparelli (2000), on which content words (e.g., nouns, verbs) systematically contribute types and only in conjunction with other components of linguistic phrases (e.g., number or tense morphology) signal reference to token instances of those types—events simpliciter in the literature discussed in Sections 2 and 3.¹⁷ The literature on type-denoting expressions offers numerous examples of how they can be used (e.g., in intensional contexts) without any entailment of existing token instances. This feature allows Grimm & McNally (2015, 2016) to capture the sort of data for which Asher (1993) posits possibilities: For example, a verb like *prevent* can describe a relation between a preventer and a type of event that is prevented from being instantiated on a specific occasion.

Though event types are ontologically distinct from event tokens, this proposal aspires to be conservative insofar as it builds on the independently motivated hypothesis that the type/token distinction is prevalently encoded in natural language, including in the subdomain of events.¹⁸ If, moreover, verbal gerunds are syntactically verb phrases, as opposed to clauses (a point to which we

¹⁵We refer readers to Ginzburg & Sag (2000) for an ontological proposal specifically focused on these latter sorts of putative entities, which we do not discuss here.

¹⁶Asher’s notion of situation is explicitly inspired by Barwise & Perry (1983).

¹⁷Zamparelli’s proposal is similar in spirit to Type Theory with Records (TTR; Cooper 2005, 2021), which in turn draws on Situation Theory (Barwise & Perry 1983) and related approaches to semantics inspired by constructive type theory of the sort developed by Martin-Löf (1984).

¹⁸We refer readers to, for instance, the literature on generics and kind reference (e.g., Mari et al. 2013), on type-theoretic approaches to semantics beyond TTR (e.g., Asher 2011, Chatzikyriakidis & Luo 2013), and on

return in Section 4.2), assigning them an event-like rather than a proposition-like interpretation is justified to the extent that linguistic evidence broadly supports a general syntax/semantics interface that associates verbs and verb phrases with events or properties, and clauses with propositions.¹⁹

Finally, the works of Zucchi (1993) and Portner (1992) deserve particular attention because they share a basic formal framework, the Semantics of Situations of Kratzer (1989), which offers unique opportunities for establishing connections between events and propositions. Kratzer's semantics has two features that facilitate this connection. First, she posits an ontology of not only real but also possible situations organized in a mereological structure. Second, she identifies maximal situations in the mereological structure with possible worlds. This allows Kratzer to maintain a version of the possible worlds analysis of propositions: A proposition is modeled as a set of maximal possible situations. Situations are arguably assimilable to events in the other ontologies discussed here, but on this analysis they simultaneously amount to partial possible worlds. Interestingly, Zucchi and Portner exploit this basic ontology in different ways. We review these proposals in turn.

Zucchi (1993) focuses on *POSS-ing* constructions and nominal gerunds, and their relation to deverbal nominals such as *arrival* or *performance*, on the one hand, and *that*-clauses, on the other.²⁰ He analyzes verbs as functions that, when fully saturated, denote sets of possible maximal situations—in other words, verbs denote propositional functions, and the clauses they form likewise denote sets of possible maximal situations.²¹ Event nouns derived from verbs denote sets of minimal situations in which the corresponding verbal predication is realized; a token event, in Zucchi's system, is just one of these minimal actual situations.

Zucchi (1993) follows Vendler closely in treating *POSS-ing* as proposition-like and yet distinct semantically from full clauses. However, he is sensitive, like Asher, to the observation that *POSS-ing* constructions sometimes appear in contexts where they do not identify a fact (recall example 15) but rather something nonactual. Such examples lead Zucchi (1993, p. 207) to add states of affairs to his ontology, which he characterizes as “things of which one may be aware, may be informed, but which, unlike propositions, cannot properly be said to have the property of truth or falsehood, or be the objects of belief.”

Zucchi (1993) builds on Kratzer (1989) by starting with her basic ontology, which includes a set *S* of situations and a set *I* of ordinary entities. Propositions are modeled as sets of situations, that is, elements of the power set of *S* ($\wp(S)$). Zucchi uses a logic inspired by Cresswell (1973) with two basic types: 1 (which includes individual constants and variables among its members) and 0 (which includes formulae among its members). Elements of *S* and *I* are among the possible denotations for expressions of type 1, while propositions are potential values for expressions of type 0. However, Zucchi also allows for propositions to serve as values for certain expressions of type 1, to capture the fact that they can serve as complements to verbs, just as ordinary entity- and situation-denoting expressions can.

modification (e.g., Landman & Morzycki 2003, McNally & Boleda 2004, Gehrke & McNally 2015). Much of this literature resembles Asher's work in limiting its ontological claims to natural language metaphysics as opposed to real world metaphysics.

¹⁹The strength of this evidence has long been debated (see, e.g., Chierchia 1984 and Dowty 1985 for early discussion in relation to the analysis of infinitival verb phrases and property versus propositional semantics). However, the key point is that one can use a general position on the uniformity of the syntax/semantics interface to guide one's position on the semantic category of verbal gerunds.

²⁰Zucchi does not discuss *ACC-ing* constructions in any detail.

²¹Readers are referred to Zucchi (1993, pp. 126–31) for comparison of his analysis with the superficially similar event semantics in the work of Davidson (1967).

To this foundation, Zucchi (1993) adds a set of primitive entities A , which he calls possible states of affairs, alongside S and I . In introducing possible states of affairs, Zucchi subsumes under this category both facts and the equivalent of Asher's (1993) possibilities: Facts are actual(ized) states of affairs. States of affairs, like propositions, are possible values for expressions of both type 0 and type 1. Finally, Zucchi relates propositions and states of affairs via a function f from $\wp(S)$ to A such that, if $f(p) = a$, then p is true if and only if a is actual. Zucchi does not elaborate in detail on the relation between states of affairs and propositions, but his formalization suggests that they can be viewed as the entity correlates of propositions.²²

Zucchi (1993) uses this system to straightforwardly capture a relation between events (minimal situations) and states of affairs. As noted in Section 3, he eventually takes event nouns like *performance* and nominal gerunds like *performing* to have two denotations. On the one hand, they denote sets of minimal situations—the smallest situations in which a performance/performing takes place. On the other, they denote sets of states of affairs. He models this ambiguity via a type-shifting operation that assigns, to an expression denoting some set of minimal situations, the state of affairs whose propositional counterpart consists of all of the (maximal) situations that have those minimal situations as parts.²³ Insofar as minimal situations are natural parts of the elements of proposition denotations, and insofar as propositions are related to states of affairs, the type shift in question, along with the ambiguity it captures, has a certain naturalness to it.

Now, Zucchi (1993) also proposes that *POSS-ing* phrases denote states of affairs: those arrived at by first assigning the *POSS-ing* phrase the same propositional denotation as the corresponding clause (for *the soprano's performing the song*, the corresponding clause would be the tenseless *the soprano perform the song*), and then type-shifting the proposition to its counterpart state of affairs. Note, however, that this way of arriving at the state of affairs denotation for *POSS-ing* does not make any interesting use of Kratzer's (1989) move to model possible worlds as maximal situations. On Zucchi's analysis, nominal gerunds are explicitly related to events, but *POSS-ing* is explicitly related only to propositions. Although nothing would prevent exploiting Kratzer's Semantics of Situations to capture the event-like features of *POSS-ing*, Zucchi is silent on this point.

In contrast, Portner (1992) focuses mainly on verbal gerunds (both *POSS-* and *ACC-ing*) as part of a larger work on propositional complements, including infinitive and subjunctive clauses; nominal gerunds and deverbal nominals fall outside the scope of this work. This difference in focus leads him to leverage Kratzer's (1989) semantics in a different way than Zucchi (1993) does. Portner starts with the same sets of situations and ordinary individuals as Zucchi, and similarly models propositions as sets of maximal situations. Again like Zucchi, Portner assumes that propositions have entity correlates, which serve as the denotations of complement clauses. Finally, he also proposes that verbal gerunds denote entity correlates. However, at this point their analyses diverge.

First, Portner (1992) does not posit or explicitly discuss states of affairs as such; therefore, it is not clear whether his entity correlates of propositions correspond to Zucchi's (1993) states of affairs or not. Second, and more importantly, the entity correlates that Portner assigns to verbal gerunds are not entity correlates of propositions in the most general sense. Rather, they are the entity correlates of sets of minimal possible situations—the sort of sets that Zucchi assigns as the

²²We refer readers to Chierchia (1984) for an earlier appeal to entity correlates of various semantic objects in the analysis of nominalization and for discussion of the notion of entity correlate more generally, which, as developed later by Chierchia (1998), bears close affinity to Carlson's (1977) notion of kind. Readers are also referred to Cresswell (1973) for an early proposal for entity correlates in the analysis of nominalizations.

²³We set aside here the technical details related to the need to appropriately saturate these nominals with arguments corresponding to the participants in the situations they describe.

semantics for nominal gerunds and deverbal nominals. In making this move, Portner establishes a basic semantic similarity between verbal gerunds and complement clauses, thus capturing the proposition-like dimension of verbal gerunds: Like propositions, verbal gerunds denote entity correlates of sets of possible situations.²⁴ However, the fact that the situations in the sets associated with verbal gerunds are necessarily minimal facilitates establishing a semantic similarity with event-denoting expressions. Sets of minimal possible situations (if not their entity correlates) are precisely the denotations that Zucchi assigns to nominal gerunds and deverbal nominals. The details of how Portner exploits these sets of minimal possible situations to capture the event-like features of verbal gerunds are too intricate to explain here, but we can at least mention two examples. He uses the restriction to minimal possible situations to account for the quantified eventive reading in example 12c and other, more complex quantificational examples (Portner 1992, chapter 3; see also Portner 1991), as well as for the fact that verbal gerund denotations lack the persistence properties that typical propositional expressions have, and that ultimately allow entailment to be defined for the latter but not the former (for discussion, see, e.g., Portner 1992, pp. 66, 100–1).

In addition, treating verbal gerunds as the entity correlates of sets of minimal possible situations leads Portner (1992) to diverge in a third way from Zucchi's (1993) account—specifically, in the semantics for nominal gerunds.²⁵ He suggests that they denote what he terms concrete situations, on analogy with other concrete individuals like people or artifacts, which he takes to be the referents of typical noun phrases: “Concrete situations are maximally specified [insofar as] they are not part of any situation which occupies the same spatiotemporal region” (Portner 1992, p. 33). This proposal raises the question of how a minimal possible situation is related to a concrete situation. Portner (1992) does not say, but he recalls (personal communication) drawing inspiration for the proposal in Kratzer's (1989) distinction between thin and thick particulars. We refer the reader to the latter work for additional discussion of this distinction.

We end this overview of differences in the ontological underpinnings of nominalization with a comment by Portner (1992) that suggests an additional similarity between his and Grimm & McNally's (2015, 2016) analyses, beyond that of establishing some sort of ontological connection between events and verbal gerund denotations. He notes in passing (Portner 1992, pp. 50–51) that “[t]he individual correlate of a proposition. . . can be called in what follows a SITUATION KIND or EVENT KIND.” The extent to which Portner's notion of event kind is equivalent to Grimm and McNally's is an important matter for future research; the implications extend beyond the semantics of nominalization to issues such as the semantics of generic expressions and the role and status of types/kinds in semantic modeling more generally.

4.2. Differences in Empirical Underpinnings

The discussion in Section 4.1 above reveals that the classification of verbal gerund denotations as more proposition-like (Vendler, Asher, Zucchi), more event-like (Grimm and McNally), or equidistant or hybrid (Portner) has depended in part on basic assumptions concerning ontology and, to some degree, the syntax/semantics interface. However, some key assumptions about the nature of the English nominalization data—particularly, about the internal syntax of verbal gerunds—have also influenced individual proposals. In this section, we highlight the two most

²⁴In fact, this feature leads to a certain ambiguity in Portner's discussion. At various points (e.g., Portner 1992, p. 138) he describes verbal gerunds as denoting entity correlates (or individual correlates, as he calls them) of propositions. However, his formal denotations (e.g., Portner 1992, p. 141) specifically mention sets of minimal situations rather than sets of situations more generally.

²⁵Portner (1992) does not discuss derived event nouns.

important of these, with the goals of flagging some of the more controversial data points and highlighting the complex and understudied nature of the data. We make additional comments on empirical challenges in Section 5.²⁶

The first controversy involves the status of the genitive-marked expression in POSS-*ing* constructions, as in example 16a. Superficially, this expression looks similar to other possessive-marked noun phrases, like that in example 16b. However, it has long been observed that while the typical possessive relation can vary with context (for recent discussion, see, e.g., Bassaganyas-Bars 2018), the relation in the case of POSS-*ing* is restricted to the subject participant role [and, indeed, Peters & Westerståhl (2013) use this fact to specifically exclude POSS-*ing* from their analysis of possessive constructions]:

- (16a) the car's needing a repair
- (16b) the car's motor
- (16c) the car needing a repair
- (16d) the car needs a repair

Grimm & McNally (2015, 2016) emphasize the similarity between POSS-*ing* constructions such as example 16a and ordinary possessives such as example 16b. Subsuming the possessive-marked nominal under ordinary possessors facilitates analyzing the rest of the verbal gerund as a verb phrase rather than as a clause (see immediately below); as noted in Section 4.1, this syntactic analysis helped push Grimm and McNally away from a proposition-like analysis of the verbal gerund's semantics.

In addition, assimilating the genitive expressions in examples 16a and b makes some welcome empirical predictions. It is consistent with Portner's (1992, pp. 106–11) analysis of POSS-*ing* constructions as presuppositional, as on most analyses ordinary possessive nominals carry some sort of presupposition, and it also leads to the expectation that other determiners could occur with VP-*ing*. The correctness of this latter prediction has been doubted in virtually all of the literature cited here, but it is supported historically (Poutsma 1923), and Grimm & McNally (2016) provide contemporary data [e.g., example 17a, from COCA (Davies 2008)] that suggest that determiner-marked verbal gerunds cannot be explained away as residual or idiomatic, as has been claimed in the case of example 17b (Abney 1987, p. 198):

- (17a) For a "normal" person, it's the not wearing make-up that is stressful.
- (17b) There's no fixing it now.

This analysis further accounts for the failure of expletive *there* to appear in POSS-*ing*, as *there* fails to provide a participant for the possessive relation:

- (18) ??there's being a car in the driveway

However, without further assumptions, assimilating the genitive expression in POSS-*ing* to other possessors leaves the restriction on the participant role unexplained. For this reason, other authors, perhaps most clearly Asher (1993), have emphasized the similarity of the possessor to the subject of ACC-*ing* and tensed clauses (as in examples 16c and d, respectively). Though the details

²⁶The internal structure of verbal gerunds has generated substantial debate in the syntax literature going back to Lees (1960). Portner (1992) and Zucchi (1993) offer useful summaries of the literature up to the early 1990s. Subsequent relevant references reflecting varied theoretical perspectives include works by Pullum (1991), Malouf (2000), Milsark (2005), and Fonteyn (2019).

of the individual analyses vary, this latter view is clearly more in line with treating verbal gerunds as ontologically closer to propositions.

The second empirical controversy involves the rest of the internal structure of the verbal gerund: specifically, whether it is a verb phrase or a full clause. As indicated above, this issue is partly connected to the treatment of the possessor phrase. If the latter is not identified with a clausal subject, there is little obvious reason to treat the rest of the verbal gerund as having the internal syntax of a clause. In contrast, if the possessor is assimilated to a subject, then the syntax for the gerund and, one would expect, its semantics, will in principle look more proposition-like.²⁷ Indeed, several influential analyses of verbal gerunds going back to Lees (1960) contemplate the possibility that verbal gerunds involve some type of clausal structure encrusted in a nominalization.

Over the decades, numerous arguments have been made for and against the verb phrase and clausal treatments of verbal gerunds; however, the data remain inconclusive. For example, Asher (1993, chapter 5) takes cases in which auxiliary *have* or negation appear in verbal gerunds, as in examples 19a and b, to support the claim that they have a clausal structure:

- (19a) their having answered the question
- (19b) their not leaving the party

However, Grimm & McNally (2016) suggest an alternative verb phrase modifier analysis for the negation, and alternatives to the analysis of *have* as categorially distinct from other verbs have also been proposed. Other, syntactic works (e.g., Horn 1975) have argued for assigning a clausal structure to ACC-*ing* and verb phrase structure to POSS-*ing*; however, Portner (1992) argues that such a move is not only unnecessary but in fact questionable.

In sum, though all of the works discussed here have followed Vendler in assigning a distinct semantic category to verbal gerunds, they differ in whether that category is ontologically closer to an event or a proposition. We have situated these differences in the context of different basic ontological assumptions as well as different linguistic data. We hope this high-level overview will inspire future efforts at more detailed comparison.

5. CHALLENGES FOR FUTURE RESEARCH

A striking fact about the Vendlerian tradition is that it emerged very specifically from a set of somewhat unusual English constructions and, indeed, a limited set of examples of those. Though detailed corpus studies have been carried out on the evolution of English verbal gerunds (e.g., Fonteyn 2019), most of those data have had little or no influence on semantic analyses or subjacent ontological questions. Moreover, although nominalization is prevalent in natural language, the use of the gerund is not the only or even the most frequent nominalization strategy. We may therefore wonder what consideration of additional English data, on the one hand, and additional data from other languages, on the other, would reveal. We offer some brief reflections on these questions in Sections 5.1 and 5.2, respectively.

5.1. Toward a Comprehensive Within-Language Perspective

Vendler's methodology consists of using patterns in linguistic data to argue for particular meta-physical claims. One can debate whether this methodology is valid or not, but let us assume that

²⁷That said, various analyses, including Zucchi's (1993) and Portner's (1992), treat the internal structure as a verb phrase, rather than a clause, while at the same time enforcing a subject-like treatment of the genitive expression in POSS-*ing* (see their respective works for details and additional references).

in principle it is. The ontological positions that are argued for will be only as solid as the analyses of the data on which they are based. There is clearly much more work to do in this area. Here we point to four specific empirical challenges raised by the constructions that Vendler was concerned with, and desiderata for future empirical research.

First, many of the claims concerning these examples have rested on armchair methods—examples invented by authors, with their own judgments—rather than on corpus research or collection of linguistic intuitions under (quasi-)experimental conditions. More comprehensive corpus research is especially necessary to clarify how exactly the different *-ing* nominalizations in English are used. This need was demonstrated in a small study by Grimm & McNally (2015) of the distribution of *-ing* nominalizations. The vast majority of verbal gerund examples discussed in the literature appear as arguments to predicates with either a possessive or accusative subject. Yet, examining the distribution of all gerund forms of 40 different verbs across the Brown corpus (Francis & Kucera 1979), Grimm & McNally (2015) found that 85% of the naturally occurring examples occurred outside of argument positions, mainly with prepositions (*by reading the letter*) or connectives (*while raking*), or as adverbial adjuncts, and 82% of *-ing* forms occurred with no overt determiner or subject. Thus, the focus of the literature (examples of ACC-*ing* or POSS-*ing* in argument position) excludes the primary uses of verbal gerunds. A large-scale quantitative study of the uses of the different *-ing* nominalizations in English would provide a much-needed empirical foundation for future research.²⁸ However, we note that simply extracting verbal gerund examples from corpora can be challenging since they are often superficially similar to other, highly frequent forms. For example, the ACC-*ing* construction often overlaps with uses of *-ing* phrases as postmodifiers of nouns; compare examples 20a and b:

- (20a) **The kids doing all the work** was a great help.
 (20b) We talked to **the kids doing all the work**.

Similar challenges arise for VP-*ing*, which must be distinguished from progressive and participial uses.

Second, attempts to complement corpus data with speaker judgments on the relative acceptability of ACC-*ing* and POSS-*ing* also face challenges. In some cases, the accusative and possessive form nominal are indistinguishable (e.g., when it is the pronoun *her*); in others it can be hard to distinguish a plural accusative nominal from a singular possessive nominal (e.g., if *the kids* were substituted with *the kid's* in example 20a). Such indeterminacy in analysis, along with the difficulties that even reasonably educated native speakers have with the orthographic conventions of possessives, may cloud speaker judgments. Moreover, this area of the English language has been subject to considerable, complex change (again, see Fonteyn 2019 for extensive discussion and references) and perhaps also manifests variation (see, e.g., the pilot study results reported in Huang 2021, footnote 6).

Third, with limited exceptions, studies of English verbal gerunds have focused on sentences out of linguistic context and have not made very sophisticated assumptions about reference and entailment. With respect to the former, Grimm & McNally (2016) offer various examples of how constructions that have been claimed to be ungrammatical out of context are, in fact, repeatedly attested. With respect to type- versus token-semantics, work going back at least to Carlson (1977)

²⁸Other quantitative studies have been carried out on smaller corpora (i.e., up to a few million words; see Fonteyn 2019 for various references), particularly for diachronic studies, but to our knowledge not for corpora even as large as the British National Corpus (about 100 million words), which arguably counts as small by current standards.

makes clear that it is possible to analyze expressions using a type-level semantics while capturing contextual entailment of token reference. Asher's extensive work on coercion (e.g., Asher 2011) further highlights the linguistic mechanisms that can make an expression seem to have a denotation that in fact it does not. Such observations underscore the key role of context and the potential relevance of alternative explanations for complex referential phenomena when evaluating the implications of linguistic data for ontological claims.

Finally, not only the diachronic work but also the comparison of Zucchi's (1993) and Portner's (1992) analyses reveal how consideration of different ranges of data can influence one's perspective on semantic analysis. Portner, for example, was concerned not only with analyzing verbal gerunds but also with relating their semantics to that of progressive uses of *-ing* forms. An effort to find a common core to the form's semantics changes the analytical problem.

5.2. Toward a Cross-Linguistic Perspective

Cross-linguistic data are equally critical for understanding the possible correspondences between forms of nominalizations and ontological objects. If it can be shown that a particular ontological type can be identified in language after language, perhaps even in relation to different nominalization forms, this greatly supports including that type in our natural language ontology. Although numerous researchers have contributed data and analyses from a range of languages, the current literature is far from offering a comprehensive understanding of how the different analyses developed for English in the Vendlerian tradition would play out, or stand in need of revision, across a substantial number of languages.

One source of complexity is that the task accomplished by verbal gerunds in English is achieved in other languages in part by infinitival constructions or other means. Accounts that focus very narrowly on single uses of forms and similarly isolated counterparts in other languages are likely to miss interesting differences between them because of the way the constructions cluster with other expressions in their respective languages. One might discover that there are reasons to assign different semantic analyses to different sorts of abstract object-related nominalizations in different languages, and that work in the Vendlerian tradition might have evolved differently if it had not been focused exclusively on English.

Several investigations of Romance languages have shown that many of the functions of the gerund observed in English are indeed distributed among deverbal nominals and nominalized infinitives, where the latter often have the elusive semantic characteristics reminiscent of those claimed for the verbal gerund in English. In a study of nominalized infinitives in Italian (known as *infinito sostantivato*), Zucchi (1993, chapter 7) argues that the three types of nominalized infinitives—S-infinitival NPs, N-infinitival NPs, and V-infinitival NPs—correspond to ontological objects familiar from our discussion of English gerunds: facts, events, and propositional entities, respectively.

In a series of studies on the distribution of deverbal nominals and different types of nominalized infinitives in Spanish, Schirakowski (2020, 2021a,b) shows that the acceptability of different forms corresponds to their occurrence in an episodic or generic context, a strain of evidence germane to the proposal of Grimm & McNally (2015). Schirakowski demonstrates that verbal nominalized infinitives occur preferably in generic contexts, presumably referring to an event kind, while in episodic, eventive contexts, verbal nominalized infinitives are degraded, in contrast to nominal nominalized infinitives and deverbal nominals.

One final example from Romance, with a twist, comes from Romanian. Iordachioaia & Soare (2015) discuss a particular type of nominalization, the nominal supine, which they argue refers to event kinds. The nominal supine, which exists alongside nominalized infinitives, is constructed

from the past participle form by suffixing the definite determiner. These two forms contrast in their ability to serve as subjects of kind-selecting predicates; only the nominal supine is allowed, as example 21 shows:

- (21) Culesul / *Culegerea grăului cu mâna a dispărut în ziua de azi.
harvest.SUP.the / harvest.INF.the wheat.GEN with hand has disappeared in day of today
'Harvesting wheat by hand is extinct nowadays.'
(Adapted from Iordachioaia & Soare 2015, example 20)

Thus, without leaving European languages, one can observe informative variation in forms and meanings of gerunds and cross-linguistic counterparts.

The literature on Romance shares with the English gerund literature a focus on occurrence in argument positions as opposed to, for instance, occurrence with temporal connectives or as adverbial adjuncts. The cross-linguistic correspondences between these grammatical contexts and the nonfinite forms used therein are discussed in the literature on converbs, which are defined as “nonfinite verb form[s] whose main function is to mark adverbial subordination” (Haspelmath 1995, p. 3), and among which the English gerund is included as a primary example. Grimm & McNally (2015) offer discussion of how such data, as well as contrasts in behavior of gerundive forms that do not appear in these constructions, can provide valuable information concerning the semantics of the different gerunds that appear in argument positions.

Other patterns of nominalization across languages highlight potential groupings of data that could lead to new ontological insights. These include the use of the same determiner as a nominalizer not only for verbs but also for adjectives, with similar semantic effect (see, e.g., McNally & de Swart 2011 on Dutch), or interactions between deverbal nominals and elaborate nominal classification systems, as in Bantu languages (see Grimm & Grimm 2021 for a case study on the language Havu). Comrie & Thompson (2007) provide a broad typological overview of the processes involved in nominalizing verbs and adjectives, and Koptjevskaja-Tamm (1993) offers data on what she calls action nominals from dozens of languages, which could be profitably mined in future research.

As indicated in Section 2, Vendler's (1968) early discussion of nominalizations involved an unusually large quantity of data for the period. Yet, subsequent research has uncovered a far greater complexity and subtlety to the data, which have only begun to be addressed in English, let alone cross-linguistically. Vendler's use of nominalization to explore ontological questions initiated fruitful and long-lasting contact between research in linguistics and philosophy of language. Our review of the literature has uncovered a complex, sometimes disconnected mosaic that presents both challenges and opportunities for connections between these fields. Further, the sheer breadth and complexity of the data have provided an opportunity for which philosophers of language, corpus linguists, typologists, syntacticians, and semanticists, among many others, may contribute critical insights into the connection between nominalizations and natural language ontology.

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Errata

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