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How do gerunds conceptualize events? A diachronic study

Abstract: This article offers a cognitive perspective on the evolution of the semantics of English nominal gerunds (NG) (I regret *the signing of the contract*) and verbal gerunds (VG) (I regret *signing the contract*). While the formal differences between NGs and VGs are well documented, their semantics remains largely unexplored territory. The perspective that is taken here is centered on the linguistic notion of *reference* and various aspects of the conceptualization involved in it. As they formally hover between more nominal and more clause-like internal properties, gerunds form an interesting test case for the cognitive perspective on referentiality. Our corpus analysis describes how the situations that NGs and VGs refer to are conceptualized as deictic expressions grounded in the speech event in Present-day English, and how this has changed since the Early Modern period. It is shown that only a multi-layered model of referentiality can account for the subtle differences found between NGs and VGs: while no fundamental shifts are found with regard to the traditional referential subtypes (specific, non-specific, generic), NGs and VGs do turn out to differ in their choice for either nominal or clausal grounding mechanisms, in their status as existentially stable or flexible entities and in the mental spaces in which they situate the events that they conceptualize.

Keywords: gerunds, reference, grounding, mental spaces, conceptualization

1 Introduction

Gerunds in Present-day English broadly fit into one of two subtypes: they either have all the formal features of a noun phrase (NP), taking determiners, adjectives and an *of*-phrase (as in (1)); or they have the internal syntax of

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a clause-like structure, with clausal participants and adverbial modification (see (2)):

(1)   There is no general monopoly on *the giving of legal advice (...)*. (BNC)

(2)   I remembered *him using the word malfunction*. (BNC)

The second, verbal type of gerunds is the result of an elongated process of change that started in Middle English and took effect especially in Modern English. The diachronic rise of the verbal gerund (VG) and the formal contexts that served as its breeding ground have been described in detail in, among others, Taijma (1985), Donner (1986), Jack (1988), van der Wurff (1993, 1997), Fanego (1996a, 1996b, 2004), and De Smet (2007, 2008). The initial stages of verbalization of the gerund have been linked to the reanalysis of a highly frequent and ambiguous gerundive subtype, viz. one that lacked overt determiners and involved constituents that could be interpreted as belonging to either NP or VP structure (e.g. locative and temporal adverbs and particles, complement clauses, items that could be either adjectival or adverbial) (Fanego 2004). When unambiguously verbal features eventually slipped into the gerundive system, they first manifested themselves in contexts that showed fewer explicitly nominal features (Fanego 2004: 38, 41), gerunds without an initial determiner (e.g. *(by) saying that*) adopting verbal features earlier than those with an article (e.g. *(by) the writing it*) and those with a possessive determiner (e.g. *(by) his writing it*) (which included a determiner but in which the presence of a subject/possessive at the same time increased the affinity with an ordinary clause). It took several centuries for verbal gerunds to become used in direct object, complement or subject position ('grammatical relations hierarchy', Fanego [2004: 41]). Nominal gerunds, in spite of their more restricted syntactic potential and the existence of alternatives in the form of derived nouns, survived.

The mechanisms driving the formal diachronic changes in the system of gerunds may have been described in detail, but it remains unclear whether the rise of the verbal gerund was accompanied by semantic changes, resulting in different conceptualizations of events in nominal vs. verbal gerunds. Systematic, let alone comparative, analysis of the semantics of nominal and verbal gerunds has thus far been lacking: the meaning of nominal gerunds tends to be dealt with mainly in vague terms and in the context of derived nouns in general (e.g. in *-ion*, *-ment* or *-al*), and that of verbal gerunds has mostly been analysed in relation to the English infinitive (see, among others, Bolinger 1968; Conrad 1982; Wierzbicka 1988; Duffley 2000, 2003). Compared to other derived nominalizations, Quirk et al. (1985) have argued, nominal gerunds zoom in on "the

conduct of the action itself" (1985: 1551) or on an "activity that is in process" (1985: 1292), rather than on "the action as a whole event, including its completion" (1985: 1551) (cp. *[His exploring of the mountain] is taking a long time* with *[His exploration of the mountain] took three weeks*). Brinton (1998: 48) suggests that the *-ing* suffix in both nominal and verbal gerunds "has the effect of converting a situation into an activity, i.e., of making the situation durative, atelic, and dynamic". When NGs and VGs have been dealt with comparatively, semantic labels have been used that actually fail to distinguish between them. Lees' (1960) notion of 'action', for instance, applies to nominal gerunds (which he calls 'action nominals') (e.g. *[his rapid drawing of the picture]*, Lees 1960: 65; see also Fraser 1970; Chomsky 1970), as well as two types of verbal gerunds, either without subject (e.g. *[Eating vegetables] is healthful*) or with subject (e.g. *(...) his job involves [my answering the phone on his behalf quite a bit of the time]*) (see Quirk et al. 1985: 1064; Declerck 1991: 497; Langacker 1991: 32; Heyvaert 2004: 501). Likewise – even though Lees (1960) restricts the label of 'fact' to a subtype of verbal gerunds – both nominal and verbal gerunds can function factively (see also Vendler [1967: 140]):

(3) a. The genre Harper enjoys most is espionage thrillers, so he bemoans *the lifting of the Iron Curtain*. (COCA)
     b. Mothopeng (...) condemned the ANC for *entering into exploratory talks with a regime which the PAC refused to recognize*. (BNC)

The semantics of nominal and verbal gerunds is, in other words, largely unexplored territory which needs further and more elaborate description. We thereby take it for granted that the semantic structure of a symbolic unit (such as a gerund) is a complex phenomenon, comprising not only the propositional content of the expression, but also "the broader conceptualization that a speaker entertains" (Taylor 2002: 21). It is this cognitive, conceptualist aspect of meaning that we wish to pursue here by mapping out how gerunds picture "the world as unconsciously organized by the mind" (Jackendoff 1983: 29; see also Croft 1991: 273). The particular perspective that will in this paper be taken on the semantics of gerunds is more particularly centered on the linguistic notion of reference and various aspects of the conceptualization involved in it: we will explore (a) how the situations that NGs and VGs refer to are conceptualized as deictic expressions grounded in the speech event; (b) whether these conceptualizations show any diachronic changes; and (c) whether they reveal significant differences for NGs vs. VGs.

The article is structured as follows: in a first part, we will consider more closely the issue of referentiality in the context of the conceptualization of

situations in nominal and verbal gerunds and elaborate on how we have interpreted it in our analysis (Section 2). In Section 3 we describe the data sets that our analysis is based on and go over the results of our corpus study, summarizing and interpreting the most important findings in Section 4.

2 Conceptualization and reference

2.1 Reference as nominal/clausal epistemic grounding

The concept of reference has been especially tied up with the analysis of noun phrases and their identifiability to the hearer: as Huddleston and Pullum (2002: 400) put it, "[r]eferential expressions are generally NPs", while verbs and adjectives, rather than being referential, realize denotation, denoting a relation between referents (verbs) or a property of a referent (adjectives). They argue that a linguistic expression has reference "if, by using it on a given occasion, a speaker intends it to pick out some independently distinguishable entity, or set of entities, in the real world (or in some fictional world)" (2002: 399). Depending on "the speaker's assessment of the hearer's current state of knowledge at a given point in the communication" (Givón 2001: 459), the noun phrase will then be marked as definite or indefinite. While in Cognitive Grammar too, we find the notion of reference primarily in the context of the discussion of noun phrases, Langacker's functional account of the noun phrase and clause in fact suggests a much broader interpretation of it. In Langacker (1987: 126), both the noun phrase and the (finite) clause are described as deictic expressions, which can be defined as structures that "include (…) some reference to a ground element within (…) [their] scope of predication", the ground involving the speech event, its participants and its setting (Langacker 1987: 126). Noun phrases in this perspective differ from clauses not so much in being referential (they both are), but in precisely which ground element they select as reference point. They will typically link up the designated instance to the speech participants, viz. through predications of definiteness (or identification to speaker and hearer) and proximity to the speaker (e.g. through the use of *this* or *that*). Finite clauses, on the other hand, "contain epistemic predications that locate the designated process (…) typically with reference to the time of speaking" (Langacker 1987: 126–127). Clausal grounding elements are especially tense and modal verbs, but also the Subject has been argued to contribute to clausal deixis, i.e., through so-called person deixis (Davidse 1997). Reference defined as epistemic grounding or deixis thus involves the ground both as conceptualizer (i.e., the speaker) and as object

of conceptualization, i.e., "a ground element must be included within the scope of predication" (Langacker 1987: 128).

Reference defined as epistemic grounding has played a pivotal role in Langacker's functional account of the noun phrase and finite clause in which significant parallels are said to exist between nominals (or NPs) and finite clauses, both representing grounded instances of a type. Nominals are thereby not only said to differ from finite clauses in terms of which aspect of the ground or speech event that they refer to (i.e., the speech participants in the case of NPs and the time of speaking in the case of finite clauses), but also with respect to their fundamental epistemic concerns. In the case of nominals, which prototypically refer to objects, identification is the speaker's primary concern since "the default expectation is for many instances of a given type to exist simultaneously and to continue existing indefinitely" (Langacker 2009: 166; see also Croft 1991: 118). The main effect sought by the speaker will therefore be situated at the level of discourse interaction when the speaker attempts to direct the hearer's attention to the intended referent. For the events designated in finite clauses, it is not so much identification that is at issue, but *existence* (occurrence). The default expectation with events is that they are transient and, consequently, "the simultaneous existence of multiple instances (...) is seldom a significant concern" (Langacker 2009: 166).

The grammaticized grounding systems in nominals and clauses, it is argued, have evolved to deal with their different epistemic concerns (Langacker 2009: 166). In the construal of a nominal referent as in the example *the cat is sleeping*, the lexical noun *cat* by itself describes a certain type of animal and thus limits attention to all instances of this particular type, but fails to single out a referent, while the full NP *the cat* profiles a grounded instance of the type denoted by the lexical noun by signaling to the hearer that the referent can be retrieved from episodic memory. In other words, noun phrases generally take nominal grounding elements – a category that largely coincides with the class of determiners (Langacker 2009) – to select their referent from the large range of candidates. As such, NPs differ from prototypical clauses, which require a different grounding mechanism. Clauses, which typically profile events, are not grounded by means of determiners or other elements signaling their identifiability, but by means of tense, the optional use of modals, and a specified subject to establish when the event occurs or whether it occurs at all. In the case of non-finite clauses, which are *atemporalized* and typically lack such grounding and (in most cases) a specified subject (Langacker 2009: 300), grounding is established indirectly through their connection with the main clause or the immediate context in which they reside. For instance, a non-finite clause such as *to build a house* by itself only profiles an event in a generalized way and

does not establish a referent. However, by connecting it to a larger matrix clause, as in *I managed to build a house*, the non-finite clause is placed in (our conception of) time and reality. It receives a specified subject *I* through a control relationship with the matrix clause, and a temporal location in the past through the combination of the lexical semantics and finite form of *manage*, which in the past tense implies that the event has taken place successfully.[1,2]

As deverbal nominalizations, gerunds form an interesting test case for the cognitive perspective on referential conceptualization in noun phrases and clauses: NGs and VGs formally hover between more nominal and more clausal internal properties – it will be interesting to see how exactly they conceptualize and relate the situations that they designate to the ground. As such, the referential perspective on gerunds is not new. It was Schachter (1976) who initiated the referential approach to verbal gerunds by analyzing Lees' category of gerundives that "cannot have any expressed subject" (Lees 1960: 72) as determinerless NPs with generic reference, e.g. *[Going to the beach] is enjoyable)*, or as designating "a specific instance of the activity" (Schachter 1976: 55), as in *I enjoyed [going to the beach yesterday]*. In Heyvaert (2008), Schachter's referential analysis was developed more systematically and it was suggested that all nominal-constructional options of determination and modification that were once possible with verbal gerunds have given way to one basic referential choice, i.e., that between specific vs. generic reference. Structurally, the system of verbal gerunds is argued to exploit all options that exist to encode the subject (viz. the explicit use of possessive, oblique or common case subject, or control), turning the atemporalized clausal head that VGs are based on (Heyvaert 2003; Langacker 1991) into the conception of an instance, specific (as in (4a–c)) or generic (as in (4d–f)). If no subject is implied, the atemporalized clausal head itself functions as verbal gerund and it is a (generic) type of situation that is designated (see (4g)):

(4)　a. I'm very grateful for *you sharing that with us*. (Collins Cobuild) [specific, common case subject]

　　b. Of course I regret *getting pregnant*. (Collins Cobuild) [specific, controlled subject]

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1 As pointed out by one of the reviewers, the lexical meaning of *manage* and the semantics of *to* contribute to this effect, as *to* signals that the location of *build* is subsequent to that of *managed*, of which the realization of the building is a result (cf. Duffley 1992: 20); the substitution of *managed* by *wanted* produces the effect of implying that *build* has no temporal location at all in the past, but is merely a subsequent potentiality that the subject of *want* had a past desire to realize.

2 Langacker (2008: 438) refers to the combination of control and temporal integration as 'indirect clausal grounding'. For reasons of brevity, we will refer to indirect clausal grounding in non-finite constructions simply as 'clausal grounding'.

    c. *Our being dropped by Scotland before the Five Nations* was a disappoint-
       ment. [specific, possessive subject]

    d. The driver is responsible for *getting the troop of colobus moving through
       the canopy*. (BNC) [generic, with control by generic subject 'the driver']

    e. She likes *driving fast cars and going to wild parties*. (Declerck 1991: 509)
       [generic, with control by specific subject 'she']

    f. Following your feature about *dogs being superior to men* I thought I'd
       offer my opinions on why dogs are a man's best friend. (Collins Cobuild)
       [generic, with explicit subject]

    g. *Eating vegetables* is healthy. [generic type, no subject implied]

The concepts of reference and grounding were also shown to play an important role in the diachronic development of nominal and verbal gerunds. In a qualitative analysis of historical gerunds focusing on the concept of definiteness and the role of the determiner, De Smet (2008, 2013) argues that definite nominal gerunds are functionally distinct from determinerless nominal and verbal gerunds in that they establish definite, commonly established or mentally accessible *anchors*, while bare nominal and verbal gerunds behave like other bare abstract nouns, profiling generic or indefinite events (De Smet 2013: 137). Importantly, however, indefinite bare gerunds often also allow for an additional, so-called *controlled reading*, as "the new information imparted by indefinite referents can be interpreted solely against the background of the immediate textual context, rather than through episodic memory as in the case of definite reference" (De Smet 2013: 137; see also Langacker 2009).[3] Because control relationships are clausal grounding mechanisms, linking "a time-unstable situation to a time-stable nominal referent" (De Smet 2013: 137), non-specific indefinite gerunds such as in example (5) in fact invite both a nominally grounded (zero-determiner, i.e., 'any instance of leaping a ditch'[4]) and a clausally grounded (controlled, with the referent of *my* as the implied subject) reading:

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[3] In addition to the bridging context identified in De Smet (2008: 68–69), Fonteyn and Heyvaert (in press) identified two other bridging contexts where the gerund allows for a clausal grounding reading alongside a nominal one. First, a number of generic gerunds invite an additional controlled (but still generic) reading (e.g., *in getynge of youre richesses and in usynge hem, ye shul alwey have thre thynges in youre herte* [generic 'you' as controller, c1390, PPCME2]). Second, some generic gerunds invite additional controlled readings that are typically not generic, but refer to an actualized specific instance of the type (e.g., *He deyed with cuttyng of his veynes* [generic cause of death or specific actualized event (i.e., *he died because he cut his veins*), a1464, PPCME2])

[4] One of the reviewers has pointed out that considering zero-determination as a nominal grounding mechanisms is problematic, as many controlled gerunds in fact take zero-determination. In this paper, we have used a distinction between gerunds with zero-determination or zero-grounding and

(5)　　Dost think, Child, that my Limbs were made for *leaping of Ditches*, and
　　　　clambring over Stiles. (PPCEME, 1602)
　　　　'Do think, Child, that my limbs are made for leaping [of] ditches, and
　　　　climbing over stiles.'

Ambiguous examples between nominal and clausal grounding such as (5)
served as bridging contexts eventually leading to the first instances of bare
nominal and verbal gerunds that rely solely on clausal grounding to establish
their referent event (De Smet 2008: 69; Fonteyn in press; Fonteyn and Heyvaert
in press). Such clausally grounded specific gerunds are illustrated in (6), where
smytyng of Malcus here profiles a specific single event that can be considered as
known or identifiable to the hearer (De Smet 2013: 137). In contrast to regular
NPs, in which such identifiable specific referents would be marked as definite by
means of a definite determiner or a demonstrative, bare nominal and verbal
gerunds can – through their control and temporal integration relationship with
the matrix clause – refer to specific events without displaying the indefinite
semantics of being 'newly introduced' (Fonteyn in press):

(6)　　And here þese blynde heretykes wanton wyt as ydiotes, whan þei seyn þat
　　　　Petur synnede not in *smytyng of Malcus here*. (Helsinki Corpus, c1400; De
　　　　Smet 2013: 137)
　　　　'And here these blind heretics lack sense as idiots, when they say that
　　　　Peter did not sin in cutting off Malcus' ear.'

While both nominal and clausal grounding are available for nominal and verbal
gerunds in older stages of English, the combination of a clausal grounding
strategy and a markedly nominal form and/or a nominal grounding strategy
with a clausal form holds a certain degree of categorial mismatch or *form-function
friction* (Fonteyn and Heyvaert, in press; see De Smet and Van de Velde 2013 for
the general notion of form-function friction). Diachronically, then, it can be
expected that nominal gerunds gradually refrain from taking clausal grounding,
while verbal gerunds specialize in this type of referent construal, eventually
leading to a more nominal and more clausal referential profile for nominal and
verbal gerunds respectively. The hypothesis that there has been a diachronic
categorical polarization in the gerundive system towards more nominal and

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bare gerunds. The first category comprises those gerunds which behave similarly to prototypical
mass (and plural) nouns in terms of their referential behavior (cf. Langacker 2009: 78), i.e., express-
ing a (non-)specific indefinite or generic referent. The category of bare gerunds, on the other hand,
comprises all gerunds that do not show any overt grammatical determination.

more clause-like referential behaviour seems to be corroborated by studies such as that by Fonteyn et al. (2015), who point out that nominal and verbal gerunds undergo a functional shift to more nominal (i.e., anaphorically trackable/manipulable) or more clausal (relational/internally accessible) discursive behavior respectively. However, it remains unclear what the exact frequencies and proportions of the different types of referential construal in the English gerundive system are, and whether they have changed over time.

In short, while previous research has focused especially on verbal gerunds and has established that they seem to have opened up to what appears to be a non-nominal type of deixis (i.e., in the context of specific, controlled reference), we will compare the deictic conceptualization of verbal gerunds with that of nominal gerunds, through systematic quantitative analysis of a data set that is not only significantly larger than the data sets used in previous research (e.g. Heyvaert 2008; De Smet 2008, 2013), but which follows the development of the gerund up until the Present-day English period. In addition, we aim to dig more deeply into the referential conceptualization that is involved in nominal and verbal gerunds by paying systematic attention to the epistemic concerns of *identification* vs. *existence* that they seem to incorporate as deverbal nominals. In the next section, we take a closer look at the traditional referential subcategories and explore the way in which they are applicable in the context of the English gerund.

2.2 Of referential subtypes and mental spaces

A referring expression typically establishes one of three main types of reference: specific, non-specific or generic reference. While the former two are said to involve individuative reference (Radden and Dirven 2007: 89), generic reference is used to refer to a class of entities as a whole, as in (7a) (Radden and Dirven 2007: 90). Generic gerunds as in (7b–c), then, refer to a type of activity rather than singling out one or more activities:

(7) a. *A lion* is a mammal.
   b. *Asking questions* is much more important than answering them. (BNC)
   c. These men, skilled in *the raising, planting, and cultivation of forest trees*, may not, of course, be able to pass an examination in Greek and Latin. (PPCMBE, 1913)

Generic gerunds can be embedded in a generic proposition, as in (7b), or they can occur in contexts that "express time-bound propositions of various kinds", as in (7c) (Lyons 1977: 194). While some accounts of genericity differentiate

between these two types, which have been labelled generic and general reference respectively (Lyons 1977: 194), we will not make that distinction here.

Within the category of non-generic or individuative reference, a further subdivision can be made between non-specific and specific reference. Specific reference involves reference to a particular entity that is anchored to the discourse context in some way (von Heusinger 2002), e.g. by being known to the speaker (as in (8a)), to both speaker and hearer (as in (8b)), or to some other participant in the discourse context (as in (8c)). Non-specific nominals establish reference to an arbitrary instance, as in (9):

(8) a. I bought *a car* yesterday.
     b. in the end the winde turned, and *the raging of the sea* began to cease. (PPCEME, 1608)
     c. John wants to marry *a Norwegian girl*. He met her during his stay abroad.

(9) a. I want to buy *a car*. (But I haven't made up my mind yet about the model.)
     b. *Any further weakening of sterling*, any further cut in base rates not sanctioned and sanitised by a cut in German interest rates, and any move to raise VAT in the Budget would all make higher inflation more likely. (BNC)
     c. *A car hitting the side of the Land Rover* would probably crush the fuel tank and spill petrol, creating an explosion risk. (BNC)

While non-specific reference is often associated with indefinite noun phrases, it is not uncommon with definite nominals, as illustrated by example (10) (see also Donnellan 1966: 285):

(10) a. *The murderer of Smith* is insane. (Whoever he is)
      b. Some believe that new plants flourish if their early growth coincides with *the growing of a new moon*. (BNC)

Example (10b) illustrates a subtype of non-specific reference, namely that of distributive reference, whereby a generalization is made over actual occurrences of an event (Willemse 2005: 189–190), such as *the growing of a new moon*.

Finally, we also discern a smaller category of non-referential nominals, viz. attributive nominals that occur in the predicative complement slot of a copular clause, as in (11):

(11) a. (...) if it doesn't kill lots of people, we don't consider it *a disaster*. (BNC)
      b. What is this but *a plain slandering of the State*? (PPCEME, 1590)
      c. young and tender constitutions will sicken at unusual exertion, which is termed, *taking too much out of him*. (PPCMBE, 1831)

In these contexts, the nominal has a "descriptive (...) rather than a referring role" (Quirk et al. 1985: 273), making it "discursively inert" (Komen et al. 2014). Consequently, non-referential or attributive nominals do not allow for anaphoric tracking in the subsequent discourse, in contrast to the other types of reference discussed above (Fonteyn in press).

While the notions of referentiality and epistemic grounding have been applied to both nominals and clauses within the framework of Cognitive Grammar, the referential subtypes that were described above have thus far been primarily defined as they apply to prototypical nouns designating 'things'. Consider for instance the ambiguity between specific and non-specific reference in the prototypical noun phrase *a cat*:

(12) I am looking for *a cat*.
    a. It ran away yesterday. [specific]
    b. I prefer kittens, but a one-year-old would be fine, as well. [non-specific]

A specific interpretation of the nominal *a cat* implies that its referent is referentially anchored or identifiable to a participant in the discourse context, in this case the speaker, while non-specific *a cat* refers to an unidentifiable and arbitrary member of the class *cat*. Interestingly, specific and non-specific reference have been associated with distinct *levels of reality*: according to Langacker (2009: 176–179), the fundamental difference between both interpretations of *a cat* stems from the distinct mental space configurations or levels of reality in which they situate their referent: specific nominals typically involve reference to real or *actual* entities, whereas non-specific nominals mostly refer to entities that are *virtual* for both interlocutors: "Further information might establish it as real and actual, connecting it to reality at a particular location in that evolving structure. Or it might not. But unless and until it is captured in this manner, it merely floats unattached as an object of thought" (Langacker 2009: 178). The mental spaces in which a referent is situated can be veridical and taken to be accurate models of the spatio-temporal world outside the mind; or they can be fictional or virtual. The former type largely overlaps with the discourse 'base space', while virtual mental spaces typically describe future, hypothetical or counterfactual situations.

The interpretation of actuality and virtuality becomes more complicated, however, when we move away from prototypical nouns denoting things and consider nouns with an event-like semantics. The reified events conceptualized by the nominalizations in examples (13a–c) have not taken place yet and could thus be said to have some kind of virtual status. Yet, in these cases, the notion of virtuality cannot be equated with that of non-specificity. Not only does the

definite marking in (13a–b) indicate that the referent of the nominal is accessible, in all cases the nominal is (partly) referentially anchored to the base space: the *son* in (13a), the *operation* in (13b) and the genitive subject *his* in (13c) are all elements that can be traced back to the discourse base space. While the events referred to are not actualized (yet), they thus nonetheless have a specific status in the mind of the speaker or conceptualizer.

(13) a. He was devoted to his little girl and looking forward to *the birth of his son*. (BNC)
     b. This is a condition affecting the events which trigger the operation and will enable *the triggering of that operation*. (BNC)
     c. (...) there is not the least likelihood of *his having forgotten his mother-tongue*. (PPCMBE, 1905)

The concepts of *actual* vs. *virtual* space, in short, receive different interpretations depending on the type of noun that they are applied to: prototypical nouns are considered virtual until their referent has been identified; processual nouns can be virtual (i.e., non-actualized) and still establish specific reference. This difference follows from the different epistemic concerns of nouns and verbs: while the contrast between actuality and virtuality is defined in terms of identification in the traditional referential framework, it is interpreted as a matter of existence in the clausal realm. Deverbal nominalizations, then, which typically combine nominal and verbal properties, can be described in terms of both epistemic concerns. If a gerund has a virtual or non-actualized status, it is not necessarily excluded from being referentially anchored to the discourse event in one way or another, and, therefore, it can still establish reference to a specific and identifiable entity.

2.3 Towards a multilayered referential model

Summarizing, then, to accurately describe the conceptualization of a situation as realized by nominal and verbal gerunds through reference, we need to reconcile the traditional conception of referential subtypes with the processual nature of gerundive nominalizations. This can be achieved by integrating more clause-like features of referentiality in the current framework. We will therefore include in our scope the different types of formal grounding mechanisms that apply within the gerundive system, which seem to hover between being more nominal (through (in)definiteness marking) vs. more clause-like in nature (through temporal/modal/person deixis) (as described in Section 2.1), while at

the same time taking into account both the epistemic concerns of identification and existence. To disentangle these concerns, we suggest a multi-layered model (Maekelberghe ms.): the traditional referential subtypes (specific, non-specific and generic reference) capture the degree to which the referent of the gerund is referentially anchored or identifiable to the speaker, hearer or to a third participant in the discourse context. Their primary epistemic concern is therefore to do with identifiability. The notion of existence accompanying deverbal nominalizations adds another layer of referential conceptualization, with actual and virtual as its basic options. It is the mental space in which the entity is accessed that determines its existential status: actual entities are accessed in actual space, which involves Fauconnier's (1985) conception of base space, as well as all the spaces referring to past or present situations, such as the space created by *in 1958* in example (14a). Virtual entities, then, are accessed in hypothetical, counterfactual, possible or future spaces that are created by various types of space builders, such as the prepositional phrase *in the unlikely event of* in example (14b).[5] Note that the distinction between actuality and virtuality, and correspondingly actualization and non-actualization, appears to be less relevant for generic entities, which are typically held to be atemporal (Carlson 1988: 167). In this paper, most generic referents have been analyzed as functioning on the level of actual mental space, as in (15a). In example (15b), on the other hand, the noun *idea* creates an explicit virtual space that seems to suggest the type of activity is located in a space different from base space; in such cases, the generic gerund was analyzed as virtual.

(14) a. They recalled that in 1958 Quakers had made an unsuccessful attempt to interrupt *atmospheric testing of H-bombs* at Bikini atoll in the Pacific. (BNC)
       b. In the unlikely event of *our ever having a socialist Government again* could not we expect to return to those appalling figures of industrial anarchy? (BNC)

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5 Note that the coding for mental space refers to the space through which the entity is accessed, which is not neccessarily the same as the space the entity is embedded in. In some cases, the gerund is embedded in a virtual mental space, but is accessed in the base space due to its presupposed status. In example (a), for instance, *his refusing* is embedded in the virtual mental space created by *thought of*, but is accessed through its counterpart in base space, where it has already been mentioned before. Such instances, although quite rare, are coded as actual rather than virtual.

(a)   She swerved to avoid hitting the guardrail on First Bridge, swung the wheel angrily at the thought of *his refusing to discuss even the selling price.* (Collins Cobuild)

(15) a. An important function of the nervous system is *the central processing of information.* (BNC)

   b. You've also promoted the idea of *using technology* wherever possible to increase interest in music. (COCA)

In Section 3, we describe the results of our corpus study. For the analysis that we present there, the gerunds were coded along the three dimensions of our referential framework:

(1)   Is the gerund referential or non-referential? If referential, does it conceptualize its referent as specific, non-specific or generic?

(2)   Does the gerund make use of nominal deixis (establishing grounding in relation to the speech participants, i.e., through the use of determiners) or clausal deixis (i.e., person and temporal deixis through control by the matrix clause)?

(3)   Which is the mental space in which nominal vs. verbal gerunds conceptualize the events that they designate? Is it actual or virtual in nature?

3 The conceptualization of events in nominal and verbal gerunds. A diachronic corpus analysis

Our analysis is based on data covering Early and Late Modern English (when the verbal gerund gained most in frequency after first manifesting itself in Middle English) and Present-day English, with approximately 70-year intervals between each period. The historical data were taken from the Penn-Helsinki Parsed Corpus of Early Modern English (PPCEME) and the Penn Parsed Corpus of Modern British English (PPCMBE). For the analysis of Present-day English data, instances of nominal and verbal gerunds were extracted from the British National Corpus (BNC), which covers the period 1980–1993. Except for the set of nominal gerunds in Late Modern English, which includes all the instances that were found in the corpus, analyses are based on random samples of nominal and verbal gerunds. To ensure maximum comparability between the different corpora, two genres were discarded: the spoken component of the BNC was left out for the analysis of Present-day English data, and statutory texts were excluded from the Early Modern and Late Modern English periods because of their highly formal status and the lack of a Present-day English counterpart in

Table 1: Overview of the different corpora and data sets.

	Early Modern English (1640–1710)	Late Modern English (1770–1914)	Present-day English (1980–1993)[6]
Corpus	PPCEME	PPCMBE	BNC
Word count	1,170,058	650,131	100,000,000
Sample size NG	500	234	396
Sample size VG	500	500	392

the BNC data. Table 1 gives an overview of the sample sizes of nominal and verbal gerunds that were thus collected.[7]

3.1 Reference types

Figure 1 shows the distribution of the four main referential subtypes – non-referential, and specific, non-specific and generic reference – over the two gerund types in the three periods under investigation. It can be observed that overall, the referential profiles of nominal and verbal gerunds are quite alike and do not significantly change over time. Only in Late Modern English do we find a significant difference between nominal and verbal gerunds: while nominal gerunds occur significantly more often with generic reference ($p = 0.005$), verbal gerunds are more frequent with specific reference ($p < 0.0001$). This trend is not continued, however, and in Present-day English nominal and verbal gerunds are again very much alike in terms of the types of referential anchorage that they provide for the events that they conceptualize: both show a preference for specific reference, marginally occur in non-referential positions and have generic and non-specific reference as second and third most frequent referent types respectively.

It is interesting, however, to step back from the end result of the referential process (i.e., the conceptualization of an entity as being specific, non-specific or generic) and take a more inclusive perspective on the referential schemata that

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6 The datasets for Present-day English originally contained 400 instances each, from which 4 nominal gerunds and 8 verbal gerunds from the spoken section were excluded.

7 Regarding the statistical tests, the diachronic changes within the different constructions were assessed using a Kendall's tau rank correlation coefficient, which has been established as the most appropriate means to quantify frequency changes in multistage diachronic data by Hilpert and Gries (2009). To assess the differences between nominal and verbal gerunds within Early Modern, Late Modern or Present-Day English, we used a chi-squared test and measured the effect size by means of a φ-coefficient.
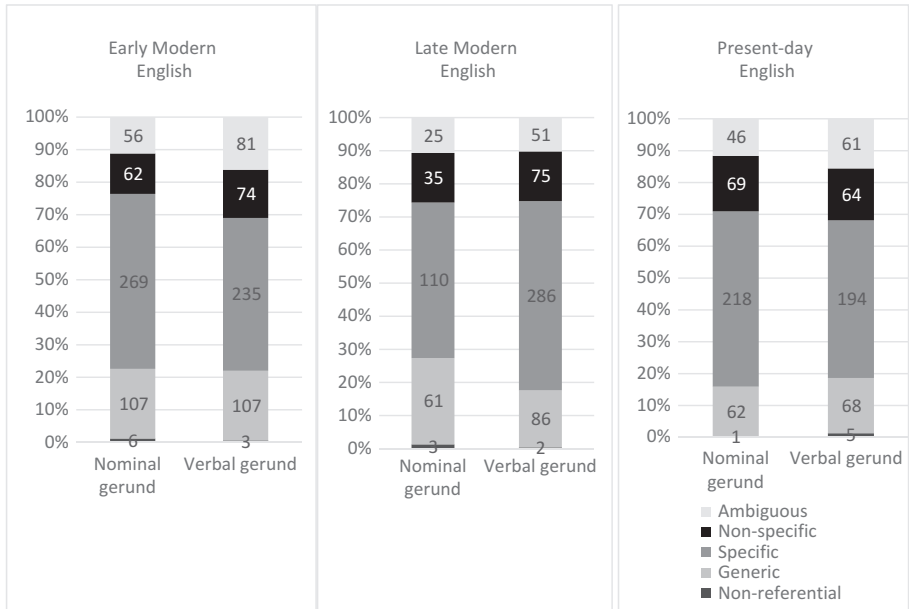
Figure 1: Nominal and verbal gerunds from Early Modern to Present-day English. Reference types.

nominal and verbal gerunds establish: in what follows, we will first zoom in on the grounding mechanisms and the ways in which nominal and verbal gerunds establish reference (Section 3.2). Secondly, we will argue that valuable insights into the distinction between nominal and verbal gerunds can be gained by including the dimension of mental spaces into the analysis and describing the conceptualization of nominal and verbal gerunds in terms of their reality status (Section 3.3).

3.2 Grounding mechanisms of reference

The English gerund, it has been argued in De Smet (2008, 2013) and Fonteyn (in press), allows grounding with both nominal as well as indirect clausal mechanisms. The nominal gerunds in (16), for instance, both profile specific events that are temporally situated in the past and are supposed to be identifiable or familiar to the addressee. However, the nominal gerunds in (16a) and (16b) use a nominal element (the definite determiner *the* and the genitive *his* respectively) to ground their referents, while the event in (16c) is related to the

ground through the temporal location and specific subject it receives from the matrix clause in which it is used.

(16)   a. He expended all the revenues of his Bishopricke in advancing *the building of this church*. (PPCMBE, 1840)

       b. *His eating of a Sheepe, a Hog, and a Duck* raw, doth shew that he is free from the sinne of nicenesse or curiosity in his Dyet. (PPCEME, 1630)

       c. I will prove, First, That he had a malicious Intent in *making of this Book*. (PPCMBE, 1793)

Similarly, verbal gerunds can construe their referent by means of nominal grounding elements, such as a zero-determiner in (17a) or a possessive in (17b), but also quite frequently combine with clausal grounding, as in (17c).

(17)   a. Owing to the cost of *erecting glasshouses*, the cost of fuel, and other items of expense many private people have discarded glass altogether. (PPCMBE, 1913)

       b. And *the Ladie's saying I made him pay for his wife's wedding apparell* is false. (PPCEME, 1650)

       c. (...) thou hast magnified thy mercy which thou haste shewed vnto me in *saving my life*. (PPCEME, 1614)

If we take the distinction between nominally and clausally grounded reference into account, a slightly different picture of the diachronic changes affecting the referential profile of nominal and verbal gerunds – and a radically different picture of the differences between their respective referential behavior – emerges. The distributions of the different referential types for the nominal gerund between Early Modern and Present-day English are presented in Figure 2. Interestingly, while there seem to be no striking diachronic shifts in the referential profile of nominal gerunds, we do observe a significant linear decline of nominal gerunds that establish their referent by means of clausal grounding in Figure 3, clausal grounding in nominal gerunds decreasing from occurring in 145 out of 500 cases (29%) in Early Modern English to only 12 out of 234 cases (5.1%) in Late Modern English, and eventually entirely disappearing in Present-day English ($p < 0.0001$, tau $= -0.361058$).

In the case of the verbal gerund, no such linear decline of clausal grounding takes place. On the contrary, as illustrated in Figure 5, it appears that verbal gerunds are more likely to allow for and in some cases even favour a clausal grounding strategy to establish their referent. In total, 59.8% to 68% of all verbal gerunds take clausal rather than nominal grounding.
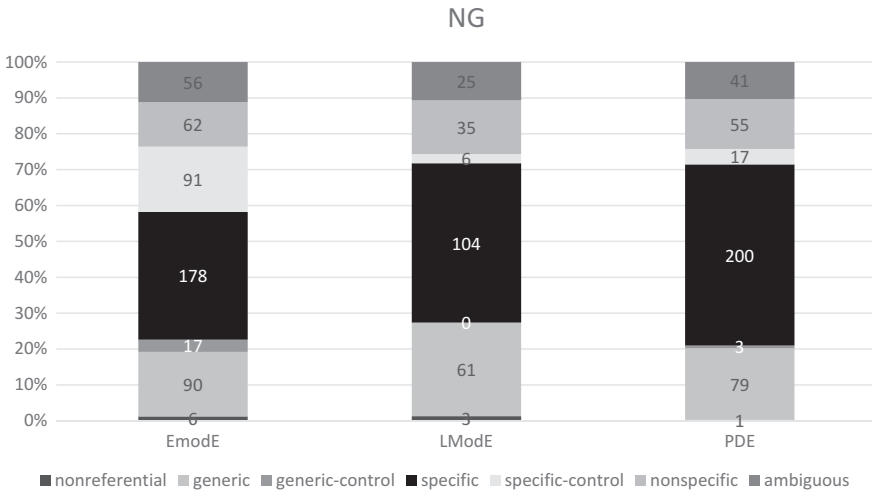
NG

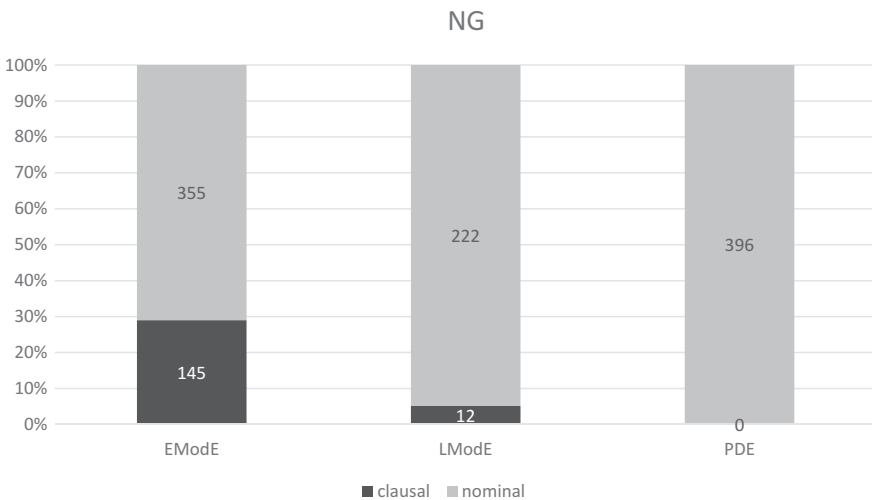**Figure 2:** Referential profile of nominal gerunds (diachrony).

NG

Figure 3: Nominal vs. clausal grounding in nominal gerunds (diachrony).

Thus, while at first sight there seems to be no apparent difference in the referential types nominal and verbal gerunds express, they do show differing behavior in the way in which they construe their referents. In Early Modern English, merely 91 out of 500 nominal gerunds (18%) establish a specific referent
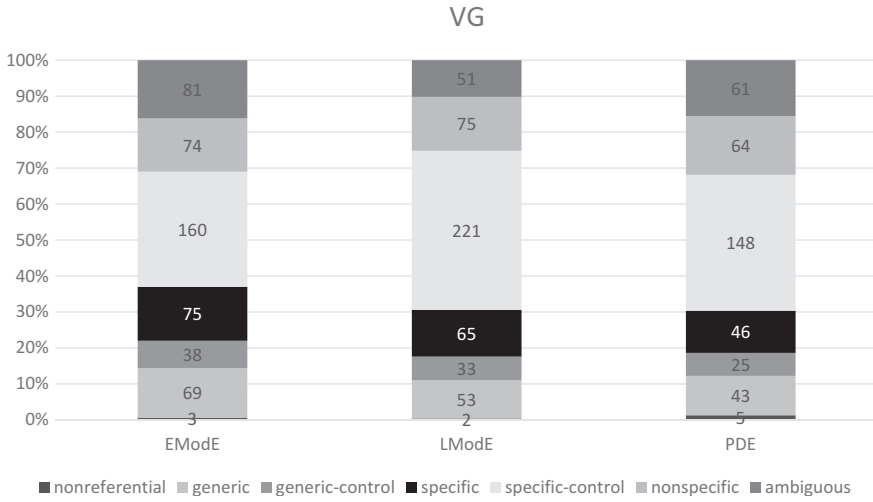
Figure 4: Referential profile of verbal gerunds (diachrony).
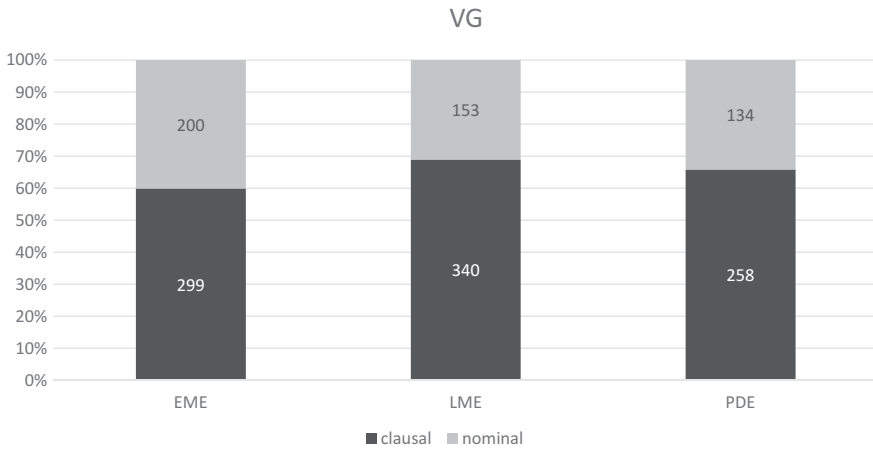
Figure 5: Nominal vs. clausal grounding in verbal gerunds (diachrony).

through clausal grounding, while this category represents 32% (160/500) of all verbal gerunds (p < 0.0001 = 7.07e-17, φ = 0.159) (Figure 4). This difference becomes even more pronounced in Late Modern and Present-day English, when nominal gerunds lose the ability to construe a specific referent by means of clausal grounding and verbal gerunds continue to express clausally grounded

specific reference in 44% (221/500) to 37.7% (148/392) of all cases (LME: p < 2.2e-160.0001, ɸ = 0.418, PDE: p < 2.2e-160.0001, ɸ = 0.409) (see, for instance, example (18a) vs. (18b)). A similar yet weaker tendency can be observed in the category of generic reference. In Early Modern English, only 3.4% (17/500) of all nominal gerunds and 7.6% (38/500) of all verbal gerunds will express clausally grounded generic reference (p = 0.006, ɸ = 0.092) (as illustrated in (18c)). In Late Modern and Present-day English, such clausally grounded generic nominal gerunds nearly disappear, only forming 0.3% (3/396) of the entire set of nominal gerunds. The percentage of clausally grounded generic verbal gerunds, on the other hand, remains fairly stable (6.3% to 6.6%), creating a slightly increasing inequality between the way in which nominal and verbal gerunds tend to construe generic reference (LME: p = 0.000128, ɸ = 0.148, PDE: p < 0.0001 = 4.732e-5, ɸ = 0.152) (see example (18d)).

(18) a. The king sent yesterday for all the Queens chief officers, and, upon *seeing of them*, fell into a great passion. (PPCEME, 1668)
      b. After *reading Henrietta's letter to him*, he rode out of his Canterbury quarters across the country to the borders of Sussex (...) (PPCMBE, 1895)
      c. For since men be blissed by *getting of felicitie*, & felicitie is Diuinitie, It concludes, that by *getting of Diuinity* men be blessed. (PPCEME, 1593)
      d. In *establishing this institution*, the influence a master has over his scholars, and the influence they have one over another, have been the objects of constant study and practice. (PPCMBE, 1860)

In short, nominal and verbal gerunds do not show significant differences and hardly any diachronic changes in whether they present the events that they conceptualize as being specific, non-specific or generic. They do, however, show a remarkable diachronic shift in the way in which this anchoring is effected, nominal gerunds increasingly opting for exclusively nominal means of grounding. Importantly, these findings indicate that, while the existing literature has mainly focused on the close association between the rise of the formally verbalized gerund and clausal grounding mechanisms, the most striking and significant diachronic changes are in fact located in the nominal component of the gerundive network, as nominal gerunds lose the ability to ground their referents clausally and specialize to nominal referent grounding. Verbal gerunds, on the other hand, show a mixed nominal/clausal grounding pattern ever since they became frequent in Early Modern English. The differences in grounding between nominal and verbal gerunds prove to be especially illuminating in the context of the description of the large set of gerunds with specific reference: specific anchorage to the discourse context has gradually come to be realized by

exclusive nominal means in nominal gerunds (through the use of determiners). When verbal gerunds establish specific reference, this is primarily done via temporal and/or person deixis (through indirect grounding and control).

3.3 Spaces

The final layer in our referential model considers the mental spaces associated with nominal vs. verbal gerunds as they conceptualize events. The distribution of nominal gerunds over the two main mental spaces is illustrated in Figure 6. Although a slight increase of instances embedded in actual space can be observed, a Kendall's tau test indicates that the correlation between the attested periods and the frequency of actual space is rather low ($p < 0.0001$, tau = 0.11). Still, it is possible to discern differences between the three periods under investigation. Using a chi-squared goodness-of-fit test to determine whether the distribution of actual and virtual space differs from a normal distribution in each period, it is shown that while this distribution is not significantly different from a normal distribution in Early Modern English, it does show a significant deviation in Late Modern ($p = 0.012$) and Present-day English ($p < 0.0001$), with effect sizes being the largest in Present day English ($\phi = 0.30$ in PDE versus 0.16 in LME). Especially in Present-day English, then, we find that the nominal gerund manifests a remarkable preference for actual space, and thus, tends to conceptualize actualized entities.
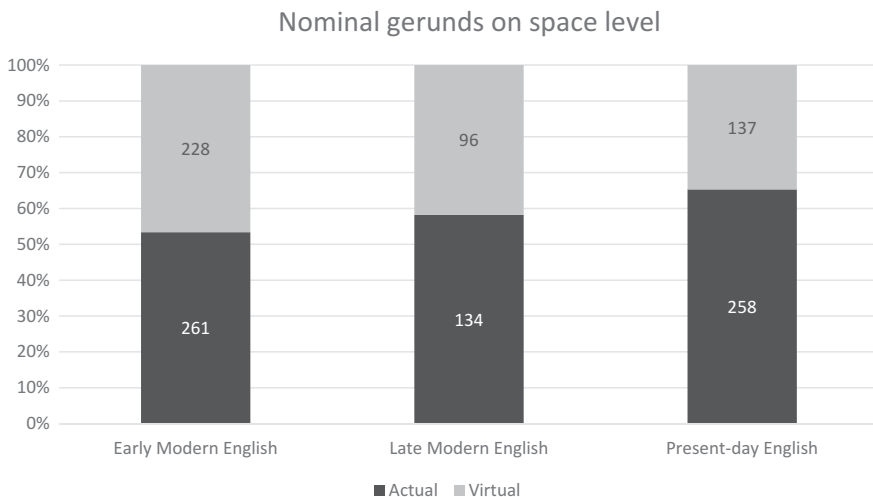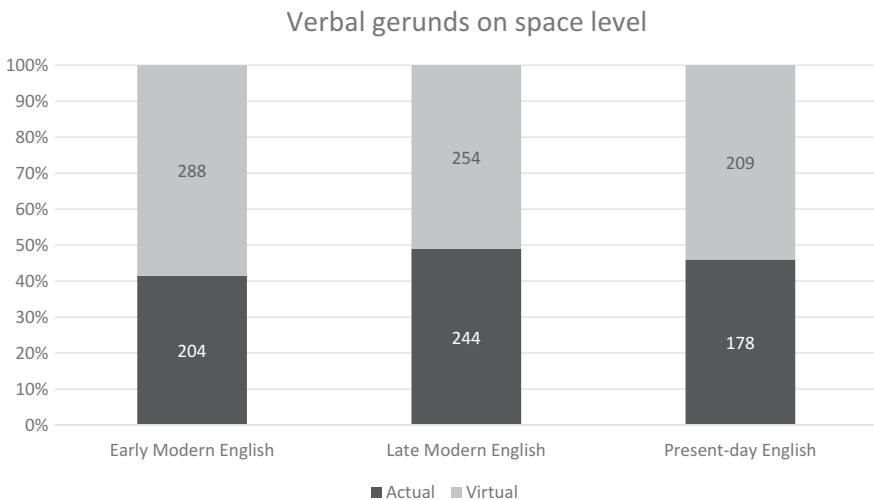

Figure 6: Distribution of nominal gerunds over actual and virtual space.

Entities which are accessed in actual space are typically existentially pre-supposed. In the case of gerunds, this means that the event that is conceptualized has already taken place or is taking place at the moment of the utterance, as in example (19a); or, in the case of generic reference, refers to a type of activity that has already been established before, as in (19b). The increase of actual space is accompanied by a decrease of virtual space; nominal gerunds have, therefore, become less common in contexts that project future or hypothetical worlds, and, correspondingly, future or hypothetical events, as in (19c–d).

(19) a. *the clearing of the ears of wax*, and the employment of nervine tonics and nervine sedatives had proved of no use. (PPCMBE, 1876) [actual, specific]
   b. We have no name for the killing of an older man, but do have a name for *the killing of one's father*. (BNC) [actual, generic]
   c. Another rule of some importance is to avoid as far as practicable *the planting of deciduous trees*. (PPCMBE, 1913) [virtual, generic]
   d. This is a condition affecting the events which trigger the operation and will enable *the triggering of that operation*. (BNC) [virtual, specific]

The distribution of verbal gerunds over actual and virtual space is mapped out in Figure 7. When comparing it to that of the nominal gerund (cf. Figure 6), it can be observed that verbal gerunds do not display the same preference for

Verbal gerunds on space level

	Early Modern English	Late Modern English	Present-day English
Virtual	288	254	209
Actual	204	244	178

■ Actual ■ Virtual

Figure 7: Distribution of verbal gerunds over actual and virtual space.

actual space. Indeed, a chi-squared test shows that in each attested period, nominal gerunds are significantly more frequent in actual space than verbal gerunds, while verbal gerunds occur more often in virtual space than do nominal gerunds.[8] With respect to the distribution of space levels over the category of verbal gerunds, a deviation from normal distribution is only found in Early Modern English (p = 0.00015), signifying that there was a slight preference for virtual space in the earliest period under investigation, which evolved into a situation of apparent free variation in later stages of English, with VGs occurring equally frequent in actual space, as in (20a), and virtual space, as in (20b).

(20) a. First Millwall won the war – then they got round to *winning this brutal but utterly compelling match at The Den*. (BNC) [actual, specific]
      b. The child looked at it without *showing a spark of emotion*. (PPCMBE, 1863) [virtual, specific]

The analysis of the mental spaces in which nominal and verbal gerunds situate the events that they refer to has thus brought to light that nominal gerunds increasingly conceptualize events that have taken place in the past or that are actualizing at the moment of speaking. Verbal gerunds, on the other hand, while they seem to have arisen especially in virtual contexts in Early Modern English, have come to designate actual and virtual events equally frequently in Present-day English.

4 A diachronic analysis of the conceptualization of events in nominal vs. verbal gerunds

This paper started out with the observation that while the formal diachronic changes affecting the system of the gerund have been well described in the literature, it remains unclear whether the gerundive system also adopted new meaning(s) in the process. Assuming that the semantic structures of gerunds are "conceptualizations shaped ... according to the dictates of linguistic convention" (Langacker 1987: 97), we decided to focus in this paper on the various ways in which nominal and verbal gerunds conceptualize the events that they designate in relation to the ground or discourse event. Due to their status as deverbal and therefore atypical noun phrases, their behavior as deictic expressions can only

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8 p = 0.0003 for Early Modern English, p = 0.02 for Late Modern English, p < 0.0001 for Present-day English.

be captured accurately, we argued, through a multi-layered referential model incorporating three distinct perspectives: (1) a referential perspective which distinguishes noun phrases based on whether or not they have individuative or generic reference, and, if individuative, whether they refer to a particular entity that is in one way or another anchored to the discourse context, for instance by being known to the speaker and/or hearer (specific vs. non-specific reference); (2) a more general deictic or epistemic perspective which zooms in on the ground element that is selected for grounding and whether that is associated with noun phrases (focusing on whether the referent is identifiable to the speech participants) or rather with clauses (through temporal indications and by being linked to a Subject); (3) an account of the mental space or level of reality in which gerundive referents are situated in the discourse, distinguishing between actual space (defined as the discourse base space and past spaces) and virtual space (involving all spaces that have not actualized (yet), including hypothetical, counterfactual, possible and future spaces).

The diachronic picture that emerges when applying this analytical model to a set of over 2,500 instances of nominal and verbal gerunds from Early Modern to Present-day English is a multifaceted one. First, it has been shown that nominal and verbal gerunds do not significantly differ in terms of the type of reference (generic, specific, non-specific) that they establish: both primarily designate specific events (i.e., events that are in some way anchored to the discourse context), but they can also refer to non-specific, arbitrary events or to types of events. Diachronically speaking, no fundamental shifts in their referential profiles seem to have occurred. When considering the way in which nominal and verbal gerunds anchor the events that they designate to the speech event, however, we noticed significant differences and interesting diachronic developments: from Late Modern English onwards, nominal gerunds increasingly favor nominal grounding (through markers of identification, i.e., determiners), while verbal gerunds increasingly opt for clausal grounding (through indirect temporal grounding and control). Finally, it was shown that nominal and verbal gerunds also differ in terms of the mental spaces in which they situate the events that they designate: nominal gerunds seem to have developed a preference for actual space and actualized events, while verbal gerunds are more flexible with regard to the spaces they are accessed in.

Interestingly, zooming in on the diachronic development of the gerundive system from a semantic perspective has revealed tendencies and shifts that do not show up when a merely formal perspective is assumed. While, for instance, most attention has traditionally been devoted to the (formal) rise of the verbal gerund, our analysis has shown that nominal gerunds undergo significant changes too, be it in the way in which they conceptualize the events that they

reify. Since Early Modern English, nominal gerunds have thus come to establish their own referential niche, viz. that of (mostly specific) reference to actualized or actualizing events, marked by nominal means of grounding or determiners. It could be argued that this shift towards specific reference in actual space brings nominal gerunds closer to prototypical nouns, which are characterized by (temporal) stability and of which the existence is presupposed (Givón 1984: 51; Langacker 2009: 167). Importantly, this diachronic nominalization of the referring potential of nominal gerunds seems to fit in with other tendencies that have been observed: research has for instance shown that, unlike verbal gerunds and like prototypical nouns, nominal gerunds have over time increasingly come to establish manipulable discourse participants that are important enough in the following discourse to become targeted anaphorically (Fonteyn et al. 2015). Event-denoting nominal gerunds have moreover also gradually opened up to count-like uses with an indefinite article (e.g. *That would represent [a bursting of the bubble]*), thereby exploiting the nominal paradigm of count and uncount nouns to the full (Maekelberghe and Heyvaert, in press; Maekelberghe et al. 2014). The referential conceptualization realized by verbal gerunds, then again, seems to be closely tied up with their atemporalized, clause-like status: while prototypical nouns profile objects with a stable existence, verbs or interactions are existentially more flexible and fundamentally transient (Langacker 2002: 32). As downranked atemporalized clausal heads (Heyvaert 2003), they depend on the clausal context in which they are used to fill in their relationship to the speech event, temporally as well as through control.[9] Their nonfinite status, in other words, makes them maximally flexible referentially speaking, and consequently, they show no preference for events conceptualized in actual or in virtual space. In short, our analysis has shown that the nominal vs. verbal character of the respective gerund types is not only reflected formally, in their internal make-up, but is also manifested on a higher-order, conceptual level.

   The comparative analysis of nominal and verbal gerunds that we presented does more than merely add to our understanding of the system of gerundive nominalization. We suggest it also adduces evidence in favour of an approach to reference that is not narrowed down to identifiability only and incorporates both the noun phrase and the clause. As also argued for in Langacker's (1987, 1991) functional model, ultimately both NPs and clauses are fundamentally concerned

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9 See Duffley (2006: 34–39 and 2014: 55–62) for a more detailed account of the influence of clausal context and matrix clause predicate on the temporal orientation of gerundive complements.

with specifying their location relative to the ground, i.e., the speaker and hearer and their spheres of knowledge. While they may differ in terms of what is primarily at issue epistemically (identification vs. existence) (Langacker 2009: 227), it is their extensive parallels that make hybrid structures such as nominalizations possible. Gerunds represent an exceptionally intriguing test case for a referential model that encompasses nominals and clauses. Whereas traditionally, analyses of the English gerund have focused on the *formal* hybridity of especially the verbal gerund, our analysis has shown that both the nominal and the verbal gerund have been testing the categorial boundaries of NP and clause referentially as well. While nominal and verbal gerunds show similar preferences within the broad range of reference types that they allow for, they display varying degrees of hybridity in the grounding mechanisms that they make use of and in the spaces within which they conceptualize events. Nominal gerunds thereby seem to have the most outspoken referential profile, predominantly realized by nominal means of grounding (determiners), and with a clear (though not absolute) preference for actual space.[10] In line with their formal hybridity, verbal gerunds show clear referential hybridity and opt for either nominal or clausal grounding, for either actual or virtual space.

By mapping out the referential conceptualization of events in nominal and verbal gerunds, we have provided a counterbalance to the focus on form that has long characterized the study of the gerund. The formal features of grammatical categories such as noun and verb, to which nominal and verbal gerunds adhere to different extents, typically mirror the degree to which a linguistic construction resembles prototypical instances of a category in a semantic and discourse-functional sense (see, among others, Hopper and Thompson 1985 and Fonteyn et al. 2015). The referential conceptualization of gerunds we set out in this paper, then, is one of the many different semantic and functional axes along which we can describe and help understand the development of and variation in the gerundive system.

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10 As Duffley (2014: Ch. 10) notes, deverbal nouns in PDE commonly "loosen the control relation between the matrix verb and its complement" (2014: 137), but are not completely resistant of taking subject control with certain main clause verbs. This also applies to nominal gerunds in PDE, which in some contexts still allow for a controlled reading alongside a nominally grounded one. However, our data set did not contain any non-ambiguously controlled nominal gerunds in PDE. While the issue certainly needs further investigation, it could be suggested that in the case of the nominal gerund, the presence of a syntactically (and in some ways semantically) very similar structure (i.e., the verbal gerund), which more readily combines with subject control, further increases the dispreference for nominal gerunds in contexts that depend on clausal grounding only.

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