

Nominalisation and Inherent Control

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I, Michael Mourounas, hereby confirm that the work presented in this thesis is my own.
Where information has been derived from other sources, I hereby confirm that this has
been marked appropriate

Abstract

In a series of works, Landau (1999, 2000) defends a typology of obligatory control predicates that distinguishes between verbs of *exhaustive control* (EC) and verbs of *partial control* (PC). These distinct classes are furthermore associated with a number of robust empirical correlations that remain consistent across clausal complement constructions in a number of different languages. This dissertation is foremost an investigation of the empirical effects of the EC/PC split as it applies to non-clausal, non-canonical complement domains, with specific focus on event-denoting nominalisations. First, it is discovered that the effects of EC as they exist in clausal environments also manifest in controlled English de-verbal nominalisations. Furthermore, it is found that the effects of PC are almost entirely absent in this same environment, save for the temporal properties associated with the selecting predicate. We thus defend a framework of control based on Wurmbrand (1998, 2001, 2002), such that the EC/PC split corresponds to a semantic/syntactic division of labour, respectively.

We first provide a fundamental analysis of English de-verbal nominalisation based on the novel observation that argument-structure does *not* disambiguate event-denoting nominals (*contra* Grimshaw 1990). Based on work by Adger (2012) and Moulton (2014), we lay out a framework in which compositionality – not verbal argument-structure – is at the heart of the nominal paradigm. We then propose an account of semantic control, as invoked by verbs of EC. First, we provide a simplified semantic representation of aspectual predicates, such that control is entailed. Furthermore, we show that this semantic analysis – when combined with an (anti-)causative syntax – can derive the raising/control ambiguity without further stipulation. Next, we motivate an account of *try*, such that the predicate encodes two separate arguments: an *action* and an *intention*. We provide an analysis such that any interpretable control effects result from the relation between these two arguments.

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Impact Statement

The work that follows consists of fundamental research into the underlying theoretical characteristics of the human language faculty. While the formal nature of this study presents no short-term direct impact on users or beneficiaries outside of the academic research community, it does contribute directly to a wider body of research in theoretical linguistics which itself presents significant direct impacts in cross-disciplinary academic and commercial research communities.

Theoretical linguistic research of the sort presented here has its most obvious impact on academic pursuits in the broader cognitive sciences. An adequate theoretical representation of aspects of the language faculty may inform psycholinguistic experimentation and empirical investigation into the acquisition and production of language in both children and adults. Equally, adequate theoretical models of speech may inform clinical study of various language disorders, including specific language impairment (SLI) and aphasia. This experimentation will have subsequent impact within the cognitive neurosciences, such that new information concerning a language user's linguistic ability may inform neurocognitive models of the human brain in its capacity to produce and comprehend natural language.

Beyond academia, the present study may be considered an indirect contribution to the ongoing pursuit of quality of life improvement. In conjunction with its impact on psycholinguistic research, formal theoretical treatments of the language faculty contribute non-trivially to experimental research into language acquisition, which subsequently leads to new discoveries in how children learn language. As such, this thesis contributes to a body of literature which indirectly informs best practices in child language education. Similarly, formal theoretical representation plays a non-trivial role in the computational modelling of the human language faculty, which ultimately gives rise to new language technologies.

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1. INTRODUCTION

1.1. A suggestive correlation and its implications

At its core, this thesis concerns the tools that a given language employs to establish a thematic relation between a single individual and two (or more) predicative expressions. This may be achieved through several mechanisms, including anaphoric pronominal binding (*John_i said that he_i would leave*) as well as raising (*John_i seemed t_i to be leaving*). The primary focus of the present work, however, will be the singular phenomenon known within the generative tradition as *obligatory subject control*, of the sort illustrated in (1). Here we follow notational convention such that PRO corresponds to the implicit subject of the embedded non-finite clause.

- (1) a. John_i began [PRO_{i/*j/*ARB} to examine the patient].
b. Mary_i demanded [PRO_{i/*j/*ARB} to investigate the suspect].

Obligatory control and control theory have occupied a markedly prominent place in the generative research programme since at least the Equi-NP Deletion transformational analysis proposed in Rosenbaum (1967, 1970), and has spawned nearly as many variant analyses as there are control scholars. Many such proposals seek to derive the effects of obligatory control from the grammatical properties and distribution of a null pronominal element PRO (see Chomsky 1981; Chomsky and Lasnik 1993; Bošković 1997; Martin 2001, a.o.). Another line of research aims to reduce control to raising (and hence to A-movement, see Hornstein 1999; Boeckx and Hornstein 2003, 2004, 2006; Bowers 2008; Hornstein and Polinsky 2010, a.o.). Further still, a number of authors have defended the view that controlled infinitives constitute bare VPs, lacking any sort of covert subject (PRO or otherwise) (Bresnan 1978; Bach 1979; Chierchia 1984; Dowty 1985, a.o.); this hypothesis has seen some recent revitalisation in the form of radical restructuring accounts of control (Wurmbrand 1998, 2001) as well as accounts invoking a mono-clausal analysis of obligatory control constructions (Cinque 2006; Fukuda 2007; Grano 2012, 2015).¹

One of the main objectives of the present study is to evaluate contemporary control theory in light of novel data concerning the effects of obligatory control into non-canonical complement types. In particular, we will look at the behaviour of obligatory control

¹ For a proper historical and contemporary overview of the various control frameworks conceived within the generative research programme, see Landau (2013).

predicates in environments involving direct object DPs. By way of illustration, consider the data in (2) involving the nominalised counterparts of the non-finite complements in (1). Here we find that, while the expected obligatory control relation obtains in (2a), example (2b) shows no control.

- (2) a. John_i began [PRO_{i/*j/*ARB} the examination of the patient].
 b. Mary_i demanded [PRO_{i/j/ARB} the investigation of the suspect].

The pattern in (2) presents a non-trivial puzzle for any account of obligatory control which derives the interpretative control relation in (1a) and (1b) uniformly. That is, if both *begin* and *demand* establish subject control into non-finite clauses in the same manner, then we should expect that they will either establish or restrict control in nominal complement environments in an equally similar manner.

While the observation that obligatory control predicates show some variation as to whether or not they enforce obligatory control into direct object DPs is not entirely new (cf. Alba-Salas 2006), we will make the novel proposal that the variation exhibited in (2) correlates systematically with the robust empirical divide between *exhaustive control* (henceforth EC) and *partial control* (PC) identified and defended in a series of works by Landau (1999, 2000, 2004, 2006, 2008, *et seq.*). Landau's distinction is primarily a typological distinction between two classes of obligatory control: (i) EC, which establishes a strict one-to-one identity relation, and (ii) PC, in which the controller-controllee relation corresponds to a proper subset relation. Among its many empirical motivations, we note that whether a verb enforces EC or permits PC is recoverable from its lexical semantic category. As such, we present our initial motivation for the present study in examples (3) and (4), which show the significant interaction between the EC/PC divide and the manifestation of obligatory control in direct object DPs.

(3) *Exhaustive Control Predicates*

- a. John_i began [PRO_{i/*j/*ARB} the examination of the patient].
 b. Mary_i managed [PRO_{i/*j/*ARB} the investigation of the suspect].
 c. The government_i tried [PRO_{i/*j/*ARB} the abolition of workers' rights].

(4) *Partial Control Predicates*

- a. John_i demanded [PRO_{i/j/ARB} the examination of the patient].
 b. Mary_i imagined [PRO_{i/j/ARB} the investigation of the suspect].
 c. The government_i regretted [PRO_{i/j/ARB} the abolition of workers' rights].

If correct, the correlation between the EC/PC split and the presence/absence of control in nominal complements suggests that whatever mechanism is responsible for EC in clausal complement environments is transparent regarding the syntactic category of the complement. In the same vein, this potential correlation suggests that the grammatical derivation of PC is tied to something specific in the non-finite, bi-clausal environment present in this example. Crucially, the variation between (1) and (2) is in line with contemporary argumentation in the relevant literature that EC and PC are derived via different grammatical properties or processes (cf. Wurmbrand 2002; Pearson 2013; Grano 2015; Landau 2015, a.o.).

There are a number of critical implications this correlation has for both control theory as well as for any working theory of derivational nominalisation. As previously mentioned, the manifestation of EC in both non-finite clauses and nominalisations motivates an account of EC predicates that is independent from the syntactic category of the complement. Pre-theoretically, this implication calls into question control analyses which rely on a uniform CP structure of non-finite embedded clauses (e.g., Chomsky 1981; Chomsky and Lasnik 1993) as well as those which key EC to a particular set of features housed on an embedded Tense projection (e.g., Landau 2004). Furthermore, the availability of EC in nominal complements suggests that the control predicate is a lexical verb, thereby presenting a non-trivial problem for mono-clausal accounts which treat EC predicates as functional auxiliaries in the matrix left-periphery (Fukuda 2007; Grano 2012, 2015).

Concerning nominalisation theory, the availability of EC in derived nominals suggests that whatever mechanism derives EC in the clausal domain is also present within the noun phrase. Thus, the internal composition of derived nominalisations becomes critical to the formulation and evaluation of any theory of exhaustive control. Can the internal structure of a de-verbal nominalisation be construed as containing a PRO subject? If so, does the underlying nominalised predicate assert the same thematic relation of its PRO subject that we find in the corresponding verbal construction? What is the role of argument- and event-structure within the nominalisation in determining the manifestation of an EC relation with the selecting predicate?

As its primary contribution to the ongoing discussion on control, this thesis aims to provide a unified analysis of EC which can adequately explain the manifestation of EC in both infinitival and nominal complement environments. In the course of developing this analysis, we will discover that the interpretative EC relation and its associated effects must be an inherent property of the selecting predicate. As such, our proposal will seek to analyse exhaustive control as a phenomenon determined directly by the lexical semantics of the

control predicate. Furthermore, we will find that the observable control patterns in nominal complement environments suggest that the relationship between argument-structure and event-structure in the nominal domain is less isomorphic than is argued in many contemporary nominalisation theories. As such, we will present an independent argument for a framework of derivational nominalisation based on semantic compositionality and widespread argument optionality.

1.2. Theoretical assumptions

Before we begin in earnest, it would be useful to establish the theoretical framework in which this thesis will be couched. First, we will adopt a relatively simplistic type-theoretic extensional semantics, as popularised by Montague (1970, 1974) and used extensively in contemporary generative linguistic inquiry (see especially Heim and Kratzer 1998). In particular, we will assume the primitive semantic types in (5), as well as the semantic denotation domains in (6).

(5) *Semantic Types*

- a. e, v, i and t are semantic types.
- b. If σ and τ are semantic types, then $\langle\sigma,\tau\rangle$ is a semantic type.
- c. Nothing else is a semantic type.

(6) *Semantic Denotation Domains*

- a. D_e = the set of individuals
- b. D_v = the set of eventualities
- c. D_i = the set of time intervals
- d. $D_t = \{0, 1\}$
- e. For any semantic types σ and τ , $D_{\langle\sigma,\tau\rangle}$ is the set of all function from D_σ to D_τ

To clarify, our inventory of semantic types includes individuals (type e) and truth values (type t), as well as their associated denotation domains (D_e and D_t). Furthermore, we include events in our inventory of semantic types (type v) and its associated domain (D_v), following the Neo-Davidsonian tradition of event-semantic analysis (cf. Davidson 1967; Parsons 1990, a.o.). Likewise, our inventory contains time intervals (type i) and its associated domain (D_i), following recent work into the semantics of tense and aspect (cf. Pancheva and Stechow 2004). Finally, we provide definitions for recursive composition of

both primitive semantic types, as well as for the domains of semantic denotation (see (5b) and (6e), respectively). Note that we omitted world variables within our inventory of types; we leave discussion of intentional semantics and possible-worlds for chapter 6.

Next, we will assume a relatively standard framework of structural computation, such that the combination of syntactic heads and phrases is driven primarily by rules of type-driven semantic composition. The nature and application of these compositional methods will be, in part, the focus of our investigation into control across complement types. That is, how does one provide a unified analysis of the compositional behaviour of a single phenomenon that seems to be transparent regarding the syntactic structure – and presumably the semantic denotation – of its complement? The following constitutes an exhaustive inventory of all compositional definitions that we will make use of in the course of this dissertation in order to address this question.

(7) *Functional Application (FA)*

Let α be a branching node with daughters β and γ ; if $\llbracket \beta \rrbracket$ is a function of type $\langle \sigma, \tau \rangle$ and $\llbracket \gamma \rrbracket$ is of type $\langle \sigma \rangle$, then $\llbracket \alpha \rrbracket = \llbracket \beta \rrbracket(\llbracket \gamma \rrbracket)$.

(8) *Predicate Modification (PM)*

Let α be a branching node with daughters β and γ ; if $\llbracket \beta \rrbracket$ and $\llbracket \gamma \rrbracket$ are both functions of type $\langle \sigma, \tau \rangle$, then $\llbracket \alpha \rrbracket = \lambda x \in D_\sigma. \llbracket \beta \rrbracket(x) \wedge \llbracket \gamma \rrbracket(x)$.

(9) *Restrict*

Let α be a branching node with daughters β and γ ; if $\llbracket \beta \rrbracket$ is a function of type $\langle \rho, \langle \sigma, \tau \rangle \rangle$ and $\llbracket \gamma \rrbracket$ is of type $\langle \rho, \tau \rangle$, then $\llbracket \alpha \rrbracket = \lambda y \in D_\rho. \lambda x \in D_\sigma. \llbracket \beta \rrbracket(y)(x) \wedge \llbracket \gamma \rrbracket(y)$.

(Chung and Ladusaw 2004)

In addition to the compositional methods in (7-9), we will on occasion invoke a method of predicate saturation known as *Existential Closure* (in the sense of Heim 1982). Much like Chung and Ladusaw (2004), we will assume that this rule may apply as an implicit unary operation on a (potentially non-terminal) syntactic node, as defined in (10). Our motivation for this assumption is primarily one of convenience; the assertion of existential closure as an implicit operation avoids the need for an additional functional head that has little or no morphosyntactic correlate. Note that this definition of existential closure is distinct from the existential quantification that may be borne on certain functional nodes (such as the

existential closure of the event variable at Aspect).

(10) *Existential Closure (EC)*

Let α be a potentially non-terminal syntactic node; if $\llbracket \alpha \rrbracket$ is a function of type $\langle \sigma, \tau \rangle$, then $EC(\llbracket \alpha \rrbracket) = \exists x \in D_\sigma [\llbracket \alpha \rrbracket(x) = 1]$.

Next, throughout this dissertation we will have need to speak about the specific semantic relations that hold between individuals and events. To this end, we will employ the term *thematic relation*, in the sense of Parsons (1990), Dowty (1991). In particular, this work will take the traditional view that the logical component of the grammar makes available a limited inventory of thematic relations that generalise across argument positions of different predicates (i.e., Agent, Theme, Beneficiary, Goal, Experiencer, etc., see Jackendoff 1972). Similarly, we will assume that these thematic relations may be introduced into the logical denotation of any given structure by either a lexical item (such as a verb) or by a dedicated functional syntactic head. We will make no attempt to reduce or isolate the precise members of the set of thematic relations.

An important clarification must be made between *thematic relations* and so-called *theta roles*, which feature prevalently in generative syntactic discussion (cf. Chomsky 1981, 1995). The nature of theta roles was of particular interest in the early formulations of the government and binding theory, which established the *theta-criterion* as a means of predictably constraining the possible utterances a grammar could generate (see especially Chomsky 1981; Haegeman 1994). While the precise relation between a thematic relation and its corresponding theta role is a matter of some controversy, it is common practice for many authors to distinguish the purely semantic thematic relations from the purely syntactic theta roles (for recent discussion, see Carnie 2006; Champollion 2010). Given that the formal distinction between these two categories has no bearing on the present investigation, we will use the appropriate thematic designation (e.g., Theme) to refer to both the relevant syntactic and semantic relation interchangeably.

In terms of underlying verbal and clausal architecture, we adopt a (relatively) agnostic perspective within this study. Our analyses and formulae will be presented in the notational tradition of Neo-Davidsonian event-semantics (in the sense of Parsons 1990), though we will adopt a partially lexicalist view such that the verb introduces its internal arguments directly. However, we note that this thesis could be adapted with minimal effort to the more radical interpretation of the Neo-Davidsonian hypothesis such that that all arguments are introduced externally to the lexical verb by dedicated functional structure

(cf. Borer 2005a, 2005b, a.o.). Furthermore, this dissertation omits any formal discussion of the nature of category-neutral roots (as are often manipulated within the Distributed Morphology framework (Halle and Marantz 1993; Marantz 1997, 2001)); again, the work that follows could easily be adapted to such a framework with minimal alterations.

One particular assumption is worth special attention, as it is featured prominently in this work: Kratzer's (1996) Voice hypothesis. Like Chomsky's (1995) 'little *v*' hypothesis, Kratzer proposed that the external arguments of (at least some) verbs are not encoded in the lexical semantics of a given predicate, but are rather introduced in the specifier position of a particular functional head in the extended verbal projection (namely, Voice). We will make no explicit attempt to motivate any one view of Voice, but rather will assume the characterisation of Voice such that it is a non-eventive functional head that relates the external argument to the verbal complex and checks accusative case (for related discussion, see Borer 1994, 2005b; Ramchand 2008; Harley 2009, a.o.).

Our motivation for adopting the Voice hypothesis is not based on necessity; like many of the assumptions discussed above, the argumentation presented throughout this dissertation would be unaffected if we assumed that external arguments are encoded directly within the lexical semantics of verbs. Instead, the Voice hypothesis constitutes something of a thought experiment for our purposes. To clarify, in section 1.1 we alluded to the notion that the present study will seek to establish exhaustive control as an inherent semantic property of EC predicates. However, we contend that appealing to lexical semantics to account for control runs the risk of merely restating the observable control relation within the predicate's denotation. That is, one might be tempted to provide a semantic denotation for the verb *manage* such that it explicitly links its subject to the implicit subject position of whatever is managed. While functional, this account would lack generality, in that each subject control predicate would need to specify an identical lexical semantic relation. Critically, the Voice hypothesis removes this temptation entirely; in terms of our previous example, the subject of *manage* would not be specified in its lexical semantics, and as such could not be manipulated within the denotation. Instead, the assumption that external arguments are absent from the lexical semantics of verbs will force us to evaluate alternative means by which a subject control relation could be inherently established. In a sense, the account that follows is reductionist in nature, as we will attempt to reduce the observable EC relation in certain subject control predicates to a combination of independently motivated principles of the grammar.

One final consideration before we begin in earnest comes in the form of a terminological ambiguity in the control literature. In section 1.1 we introduced Landau's

(1999, 2000) empirical distinction between EC and PC, which constitute two distinct species of obligatory control (OC) in Landau's system. OC may likewise be distinguished from non-obligatory control (NOC), which governs the possible control of an embedded PRO subject in various infinitival adjuncts (see Landau 2013 for a recent survey of the OC/NOC literature). Critically, Landau's categorisation of both EC and PC as OC contrasts with the approach taken by Wurmbrand (2001, 2002), who classifies EC as OC and PC as a type of NOC. Given that the present work largely adopts Wurmbrand's 'division of labour' hypothesis (see section 3.5), we will likewise broadly adopt Wurmbrand's terminological perspective, such that EC = OC and PC = NOC. Furthermore, note that throughout this thesis, our discussion of 'obligatory control' and its manifestation concerns only the presence or absence of an obligatory thematic dependency, independent of any assumptions regarding a syntactic PRO and its attributes.

1.3. Structure of the dissertation

The remainder of this thesis consists of six chapters, organised in the following manner. In chapter 2 we provide an overview of the EC/PC distinction and its relevant correlates, as discussed in Landau (1999, 2000, 2004, *et seq.*). We then provide a series of data which motivate the hypothesis that EC exists into derived nominal complements in the same manner as it does into non-finite clausal complements, while PC does not. Furthermore, we will show that whether or not EC is established into the nominal complement is keyed directly to whether or not the nominalisation is compositionally derived from a verbal predicate, and not to the realisation of overt argument-structure within the nominal. This chapter will conclude with three key generalisations that any account of control into nominals must account for.

Chapter 3 provides a comprehensive evaluation of many contemporary analyses of control in light of the asymmetrical control pattern observed in chapter 2. In particular, we find that purely syntactic analyses of the EC/PC divide under-generate in the domain of nominal control. That is, PRO-based accounts (such as Williams 1980; Sag and Pollard 1991; Landau 2004; van Urk 2011, a.o.) as well as the MTC (Hornstein 1999; Boeckx and Hornstein 2003, a.o.) correctly predict the lack of control in PC predicate constructions, but fail to predict the manifestation of EC in those same environments. Likewise, we find that the purely semantic approach to control defended in Culicover and Jackendoff (2001, 2005, 2006) over-generates in the environment of nominal complements; they correctly predict the observable EC relation, but fail to predict the lack of control in PC predicate

constructions. Finally, we review the proposal by Wurmbrand (2002) such that the EC/PC distinction corresponds to a semantic/syntactic division of labour. We conclude that, with adequate assumptions regarding the internal composition of derived nominals, this account provides the most natural explanation of the asymmetrical control pattern observed in nominal complements.

Chapter 4 establishes an analysis of English deverbal nominalisation that is in line with the assumptions made of nominal composition in chapter 3. Namely, we defend the hypothesis that arguments are always optional in derived nominalisations (*contra* Grimshaw 1990). To this end, we present a series of diagnostic data which show that nominalisations compositionally built from verbal bases pattern uniformly regardless of whether they realise an internal argument. Furthermore, we provide independent data which show that *of*-marked arguments in deverbal nominalisations are not ‘true’ verbal arguments, in that they fail to exhibit a number of diagnostic behaviours typically associated with the direct objects of verbs. We then present a formal account of English deverbal nominalisation which follows in spirit the analysis of Adger (2012), such that *of*-arguments may be optionally realised within a nominal applicative structure.

In chapter 5 we present a formal analysis of English EC predicates of the aspectual sub-type which uniformly accounts for EC and its associated effects in both nominal and infinitival complement environments. To begin, we establish that aspectual predicates are (anti-)causative in nature (cf. Pustejovsky and Bouillon 1995). We subsequently provide a radically simplified lexical semantic analysis of aspectual predicates which draws on general principles of classical mereology (Krifka 1989, 1992; Champollion and Krifka 2016), as well as recent semantic work by Piñango and Deo (2016). Furthermore, we show that when combined with variable methods of semantic composition, a single lexical entry can account for control into both nominal and clausal complement types. Finally, our account leverages a causative syntax following (Pylkkänen 2008) which provides some purchase on the raising/control ambiguity often attributed to aspectual predicates (see especially Perlmutter 1970). We establish EC and its associated effects as following from principles of direct causation (in the sense of Kratzer 2005), as well as from the necessarily small size of any non-finite complements.

Chapter 6 provides a formal account of the EC predicate *try*, which takes inspiration from recent theoretical work on the predicate *explain* and the *explanans/explanandum* distinction (cf. Pietroski 2000). In particular, we argue that *try* constructions involve two distinct components: an *action* and an *intention* (cf. Sharvit 2003; Grano 2011, 2017). However, unlike previous accounts, we propose that the *action* component is not an

aspectual component in the denotation of *try*, but is rather an individual Theme argument of the predicate. We motivate this view based on novel data concerning the entailment/presuppositional patterns of *try* in various complement environments. Furthermore, we establish the *intentional* component of *try* within the decompositional view of attitudes and intentions (Kratzer 2006; Moulton 2009), such that the intention associated with the event of *trying* is built into the non-finite complement itself. The result of this analysis is such that we attribute a relatively simplistic Neo-Davidsonian denotation to the *try* predicate itself, with much of the work being shifted to the syntactic environment in which it appears.

We conclude in chapter 7 with an overview of questions which have not been directly tackled by this thesis. Foremost among them is the status of PC predicates, and the structural nature of PC in clausal complement environments. To this end we note that Landau's (2015) analysis of PC makes the correct predictions regarding the lack of PC into nominals, as it makes crucial use of the embedded clausal CP layer. Further, we address the nature of temporal orientation in nominal environments, and conclude that any analysis of PC which packages control and temporal properties together (i.e., Landau 2004; Pearson 2013, 2016) makes the wrong predictions regarding nominal complements to PC verbs.

2. INTRODUCING NOMINAL COMPLEMENTS TO THE DISCUSSION ON CONTROL

2.1. Introduction

In this chapter we will establish the properties of apparent control relations in noun phrase complements to control predicates. The primary question to be answered is ‘do the empirical correlates of the EC/PC split – as they exist in the domain of clausal complementation – manifest in nominal complement constructions?’ We begin in section 2.2 with an evaluation of previous analyses of control-like phenomena in nominal environments. Then in section 2.3 we provide an overview of the robust empirical correlations associated with the EC/PC divide. Having identified the key empirical trends, section 2.4 then investigates the pervasiveness of these trends in the novel environment of complex event nominal complementation. In section 2.5 this line of inquiry is extended to the domain of simple event nominal complements, and in 2.6 we consider some additional nominal categories. In section 2.7 I make explicit the key generalisations that emerge from this investigation and propose that any uniform theory of complement control should make accounting for these generalisations its primary objective.

It should be noted that the judgments regarding the acceptability of the data presented in this chapter (and subsequent chapters) represent the informal linguistic intuitions of a limited set of native speaker correspondents. Our initial investigation and subsequent hypotheses are concerned entirely with the competence of the language user (in the sense of Chomsky 1965), and make no formal attempts to quantify the reported judgments to any empirically robust order of magnitude. Despite these limitations, this chapter will converge on a series of generalisations which adequately represent the intuitive linguistic knowledge of a native English speaker regarding the effects of obligatory control into certain classes of nouns. As such, this work constitutes only a first step, and it is imperative that the hypotheses and generalisations presented here be further scrutinised in future empirical/experimental work.

2.1.1. A note on terminology

Before we progress any further, a few words are in order regarding the terminology used throughout this chapter. First, the kinds of constructions under investigation in this chapter – and indeed, throughout this thesis – are specifically those involving control verbs with

nominal complements. For example, the utterance in (11) involves a canonical control verb followed by a DP direct object.

(11) [TP The doctoral student [VP promised [DP a thorough investigation of control]]]

Note that this kind of construction is very different from control *within* nominals, which has been discussed in the literature at length (see a.o. Culicover and Jackendoff 2001; Boeckx and Hornstein 2003). Control within NP constructions, as illustrated in (12), involves embedded infinitival complements to nouns that are presumably derived from control verbs.

(12) [DP The doctoral student's [NP promise [TP to investigate control thoroughly]]]

While we may employ structures such as in (12) to test our hypotheses as we go on, our primary focus will be on constructions involving direct object DPs. For further discussion of control within nominals and the difficulties it raises, see Landau (2013:213-220).

Second, as a topic, control *into* nominals provides a unique cross-section between two highly controversial topics in generative grammar: control and nominalisation. As such, English nominalisation patterns will play a crucial role in understanding the behaviour of control predicates in the environment of direct object DPs. In order to avoid confusion, we will adopt the terminological conventions of Grimshaw (1990), which distinguishes between three types of nominalisation: (i) complex event nominals, (ii) simple event nominals and (iii) result nominals.

Complex event nominals (henceforth, CENs) are event denoting, and obligatorily project the internal argument of the corresponding verb, if available (see (13a)). Simple event nominals (henceforth, SENs) are likewise event denoting, but crucially cannot project argument structure (as in (13b)). Finally, result nominals (henceforth, RNs) are neither event denoting nor argument projecting, and their meaning is only idiosyncratically related to the underlying verb (13c). Event-denotation is distinguished by compatibility with the predicate *take x hours*.

- | | | |
|---------|--|-----|
| (13) a. | The examination of the patient took three hours. | CEN |
| b. | The examination took three hours. | SEN |
| c. | The examination was photocopied on green paper. | RN |

The aim of chapter 4 will be to critically evaluate Grimshaw’s typology, as well as the methodology of its associated diagnostics. Further, it will contest many of Grimshaw’s claims regarding argument optionality in the nominal domain. However, for the purposes of this initial fact-finding inquiry, the designations in (13) will be utilised wholesale when referring to the different possible DP complement types of control verbs.

2.2. Previous observations

2.2.1. Alba-Salas (2006)

In Alba-Salas’ (2006) investigation of control effects into Romance nominals, the author distinguishes four separate groups of predicates based on whether or not they induce obligatory control into their complement. Of these four classes, two are concerned with verbs that can only take nominal complements: (i) verbs such as *fer* (*make*) and *efectuar* (*do*) that induce obligatory control effects into their NP complements (see (14a)), and (ii) verbs such as *criticar* (*criticise*) and *esmentar* (*mention*) which do not (see (14b)).

(14) a. La Mònica (li) farà [PRO_{i/*j/*ARB} una trucada (*del Pere)
the Monica (to.her) will.make a call (of.the Pere)
a L’Eva.]
to the.Eva

‘Monica will give Eva a call (*by/from Pere).’

b. El Pau esmentà [PRO_{i/j/ARB} una inversió de 300 euros
the Paul mentioned an investment of 300 Euros
(de/per part de l’Ali)]
(of/by part of the.Ali)

‘Paul mentioned a 300-euro investment (by Ali).’

(CATALAN; adapted from (Landau 2013:210))

The remaining two classes of Romance predicates in Alba-Salas’ study involve those that can take both infinitival and nominal complements. Here, the author discovers that while some predicates will enforce obligatory control into both infinitival and nominal complements, others will only induce obligatory control into infinitives, leaving any nominal complements uncontrolled. The predicate classes are roughly as follows: (i) the *començar* class, which enforces obligatory control into both infinitives and nominals (see

(15a) employing the control predicate *dedicar-se*), and (ii) the *prometre* class, which enforces obligatory control into infinitives but not into nominals (see (15b)).

(15) a. L'Eva_i es dedica a [PRO_{i/*j/*ARB} la falsificació de passaports.]
 the.Eva REF devotes to the forgery of passports
 'Eva forges passports (for a living).'

b. L'Eva_i ens va prometre [PRO_{i/j/ARB} una investigació de l'escandol
 the.Eva to.us PST promise an investigation of the.scandal
 (per part del govern_j)]
 (by part of.the government)

'Eva promised us an investigation of the scandal (by the government).'

(CATALAN; Landau 2013:210)

The author's analysis of these facts is rooted in the conceptual-structure theory of control, as developed by Jackendoff and Culicover (2003). This system will be discussed at length in chapter 3; for now, it is enough to note that within this framework, obligatory control is keyed to action-denoting complements. In essence, any control predicate which encodes an action complement also lexically determines the controller by way of argument binding. In order to account for predicates of the type in (15b), Alba-Salas posits a lexical ambiguity: one lexical entry of *prometre* sub-categorises for infinitival complements and encodes obligatory control, while another lexical entry sub-categorises for DP complements and encodes no control (or non-obligatory control).

This analysis is criticised by Landau (2013) who notes that, empirically, the infinitival-nominal contrast cannot be reduced to the action-state contrast. Citing Giorgi and Longobardi (1991), Landau demonstrates that while the Italian verbs *volere* (*want*) and *amare* (*love*) both allow non-action complements (both infinitival and nominal), only the nominal counterparts permit non-obligatory control readings, as illustrated by the contrast in (16). Landau claims that such contrasts reveal an irreducible syntactic component to control.

(16) a. Socrate_i voleva/amava anzitutto conoscere se stesso/*se stessi.
 Socrates wanted/loved mainly to.know himself/*oneself
 'Socrates mainly wanted/love to know himself/*oneself.'

- b. Socrate; voleva/amava anzitutto la conoscenza di se stesso/se stessi.
Socrates wanted/loved mainly the knowledge of himself/oneself
'Socrates mainly wanted/love the knowledge of himself/oneself.'

ITALIAN

It is worth mentioning here that both Alba-Salas and Landau fail to notice that the verbs of the *començar* group (exemplified in (15a)) roughly correspond to those predicates which enforce exhaustive control in clausal complement constructions. Similarly, the verbs of the *prometre* group (see (15b)) correspond to those predicates which permit partial control in clausal complement constructions. Thus, one of the great contributions of Alba-Salas' (2006) study is the observation that EC predicates enforce obligatory control in both infinitival clauses and nominals, while PC predicates show no obligatory control effects into nominal complements. We will see later in this chapter that the same observations can be made for English control constructions, and will be a primary motivator for the control analysis formulated in this dissertation.

Finally, we note that Landau's claim of an irreducible syntactic component, while correct to some extent, is too general. We will see in this thesis that while for some control predicates a particular syntactic configuration is key, others seem to be syntactically agnostic. We will argue that this contrast is systematic and predictable from general components of the grammar.

2.2.2. Sichel (2010)

In a recent examination of control effects in nominal environments, Sichel (2010) primarily examines constructions involving control within DPs (as in (12)). However, in doing so, the author makes a number of discoveries regarding the nature of the implicit subject of event nominalisations. Namely, Sichel finds that the interpretation of any implicit subjects inside the DP is coloured by the pragmatic force of the matrix predicate. For example, predicates such as *maintain* and *stick to* favour co-reference between the matrix subject and the implicit nominal subject (as in (17a)). In contrast, predicates such as *criticise* and *agree with* favour disjoint reference with the possessor DP in the matrix clause (see (17b)). Finally, predicates such as *be committed to* in (17c) show no particular biases, and permit both interpretations. We follow Landau (2013) in labelling the reference of the implicit nominal subject using *pro*.

- (17) a. [John's_i [mother_j]] maintained/stuck to [*pro*_{j/*i} the refusal [PRO_{j/*i} to jeopardise herself_j/*himself_i]]
- b. [John's_i [mother_j]] criticised/agreed with [*pro*_{i/*j} the refusal [PRO_{i/*j} to jeopardise himself_i/*herself_j]]
- c. [John's_i [mother_j]] was committed to [*pro*_{i/j} the refusal [PRO_{i/j} to jeopardise himself_i/herself_j]]

Crucially, given that the interpretation of *pro* in these cases is biased by pragmatic influences, the preferred interpretation is defeasible in marked contexts. For example, while the predicate *criticise* above prefers disjoint reference, it is perfectly plausible to construct a context in which John's mother criticises her own refusal to jeopardise herself (perhaps speaking retrospectively, after the full consequences of her refusal have been felt).

This behaviour is strikingly different from the behaviour of these obligatory control predicates in clausal complement environments. As we see in (18), the implicit subject of gerundive complements may never obviate c-command so as to co-refer with a possessor DP.

- (18) a. [John's_i [mother_j]] criticised/agreed with refusing [PRO_{j/*i} to jeopardise herself_j/*himself_i]]
- b. [John's_i [mother_j]] was committed to refusing [PRO_{j/*i} to jeopardise herself_j/*himself_i]]

One immediate problem with Sichel's account becomes apparent when we consider Alba-Salas' (2006) findings regarding the *començar* class of control predicates. This group of subject control verbs shows apparent obligatory control effects into both clausal and nominal complements. According to Sichel's *pro* account of implicit nominal subjects, the relation that Alba-Salas interprets as obligatory control can at most be a strong pragmatic bias induced by the matrix verb. As such, we should be able to force a reading in which verbs of the *començar* class permit disjoint reference. Using the equivalent English predicate *dedicate oneself to* (see (15a) above), we find that co-reference between a possessor in the matrix clause and the implicit nominal subject is impossible in these contexts, as illustrated in (19a). Hence, the nominal constructions mirror the corresponding gerundive complement environment (19b).

- (19) a. [John's_i [mother_j]] dedicated herself to [*pro*_{j/*i} the refusal to jeopardise herself_j/*himself_i]]
 b. [John's_i [mother_j]] dedicated herself to [PRO_{j/*i} refusing to jeopardise herself_j/*himself]]

Landau (2013) provides some further criticism of Sichel's (2010) account. This criticism is aimed primarily at the typological motivation associated with licensing *pro* in a language without *pro*-drop, such as English. While the question is fair, it should be noted that Sichel's account does not make any claims about *pro* directly. Instead, she employs the murky terminology of 'implicit nominal subject'. While choosing to represent this implicit argument as *pro* is one potential strategy, there are a number of other possible solutions, such as lexical/semantic suppression of said argument (see a.o. Grimshaw 1990; Szabolcsi 1992).

2.3. The empirical correlates of EC/PC

In Landau's (1999, 2000) original classification of control predicates, PC is distinguished as a control relation in which the overt controller is a proper subset of the set of implicit controllees. This subset relation can be illustrated with examples such as those in (20). In example (20a), we see that the collective predicate *gather* does not accept a semantically singular subject. When embedded beneath the PC predicate *want* in (20b) however, *gather* is compatible with a singular controller. This observation suggests that the implicit subject of the embedded infinitive is semantically plural, despite the singularity of the overt subject of the matrix clause. Similarly, the modifier *together* requires a semantically plural subject in the modified clause, and as such its realisation in (20c) yields ungrammaticality. This is not the case when the modifier targets an infinitival clause embedded under a PC predicate, as in (20d), thereby providing further evidence for a semantically plural null subject.

- (20) a. *John gathered at 6.
 b. John wanted to gather at 6.
 c. John went to the cinema (*together).
 d. John wanted to go to the cinema (together).

Note my use of the term *semantically plural* above; this notion is quite different from the notion of *syntactic* plurality. While the null subjects of infinitival clauses embedded

beneath PC predicates can be shown to express collectivity/semantic plurality (as in (20)), they do not express plurality in a way that is relevant to the syntax. Take for example the anaphor *each other*, which requires a syntactically plural antecedent. In example (21a) we see *each other* grammatically bound by a plural antecedent within the same clause. In (21b) we find the anaphor presumably bound by a syntactically plural null subject in the infinitive. However, the null subject in (21c) is unable to bind the syntactically plural anaphor, despite its ability to express semantic plurality (as in (20b,d)).

- (21) a. John and Mary met each other.
 b. John and Mary wanted to meet each other.
 c. *John wanted to meet each other.

EC predicates, on the other hand, enforce a strict one-to-one identity relation between controller and controllee. As expected, collective predicates such as *gather* and *together* cause the derivation to crash when embedded beneath an EC verb such as *manage* with a singular external argument.

- (22) a. *John managed to gather at 6.
 b. *John managed to go to the cinema together.

Landau (1999, 2000) makes the critical observation that whether or not a predicate enforces EC or permits PC is entirely recoverable from the semantic class of the predicate. The following (non-exhaustive) list provides a cross-section of semantically classed predicates by control type (adapted from Landau 2000, 2013).

(23) *Exhaustive Control Predicates*

- | | |
|-----------------------------|---|
| a. <u>Implicative</u> : | <i>dare, manage, forget_{to}, force, bother, remember_{to}, ...</i> |
| b. <u>Aspectual</u> : | <i>begin, start, finish, continue, resume, ...</i> |
| c. <u>Modal</u> : | <i>have, need, may, should, must, ...</i> |
| d. <u>Non-implicative</u> : | <i>try</i> |

(24) *Partial Control Predicates*

- a. Factive: *glad, sad, regret, dislike, hate, loathe, sorry,*
...
- b. Propositional: *believe, think, suppose, imagine, say, claim,*
assert, ...
- c. Desiderative: *want, prefer, yearn, arrange, hope, afraid,*
refuse, agree, plan, aspire, offer, decide,
mean, intend, resolve, strive, demand,
promise, ...
- d. Interrogative: *wonder, ask, find out, interrogate, inquire,*
contemplate, deliberate, guess, grasp,
understand, know, unclear, ...

This division of predicates into those which obligatorily enforce EC and those which permit PC has been linked to a number of robust empirical correlates. For our purposes, two such correlates will be the focus of the remainder of this section. The first concerns the presence of (in)dependent tense in the embedded infinitive. Specifically, it has been argued that PC predicates allow an independent temporal modifier in the embedded clause, while EC predicates do not (Landau 1999, 2000, 2004). The second correlation concerns the possibility of an overt embedded subject in the complement clause. In this case, PC predicates permit overt DP subjects in non-control contexts, while EC predicates do not (Grano 2012, 2015).

Further empirical correlates of the EC/PC divide include the generalisation that EC predicates allow restructuring, while PC predicates do not (in those languages which exhibit restructuring phenomena, cf. Wurmbrand 1998, 2001; Landau 2000; Barrie 2004; Cinque 2006; Grano 2012, 2015), as well as the generalisation that PC predicates may select tensed, finite complement clauses, while EC predicates may not (Grano 2015). The latter is closely related – though not identical – to the possibility of overt embedded subjects, as we will see in section 2.3.2. For the purposes of our investigation into controlled NP complements, these correlations will be put aside for now, as any theoretical account must be integrally linked to the structure of the left-periphery of infinitival clauses.

2.3.1. Tense (in)dependence

Tense independence in the complement clause surfaces as a ‘tense mismatch’ between the

matrix and embedded clauses (Stowell 1982; Landau 2000). In example (25) I demonstrate a tense mismatch, in which the embedded clause permits a temporal modifier that conflicts with a temporal modifier in the matrix clause. I provide the tense mismatch generalisation in (26).

(25) **Yesterday**, Mary planned to leave the city **tomorrow**.

(26) *Tense (in)dependence generalisation*

PC predicates permit tense mismatch between the matrix clause and the embedded clause; EC predicates do not.

In order to demonstrate this correlation, the examples in (27) consist of PC predicates of each semantic type. In each case, a tense mismatch between the matrix and embedded clauses is licensed. Conversely, we find that the EC predicates in (28) become ungrammatical with the introduction of a conflicting temporal modifier in the embedded clause.

(27) *PC Predicates*

- | | | |
|----|--|----------------------|
| a. | Yesterday, John demanded to go to the gym (tomorrow). | desiderative |
| b. | Yesterday, John wondered whether to go to the gym (tomorrow). | interrogative |
| c. | Today, John regretted going to the gym (yesterday). | factive |
| d. | Today, John claimed to have gone to the gym (yesterday). | propositional |

(28) *EC Predicates*

- | | | |
|----|--|--------------------|
| a. | Yesterday, John managed to go to the gym (*tomorrow). | implicative |
| b. | Yesterday, John began to go to the gym (*tomorrow). | aspectual |
| c. | Yesterday, John had to go to the gym (*tomorrow). | modal |
| d. | Yesterday, John tried to go to the gym (*tomorrow). | <i>try</i> |

This generalisation regarding tense can be extended to locational displacement. PC predicates – which permit tense mismatch – will also permit locational displacement of the embedded event. That is, the matrix event and the embedded event need not occur at the same location (as illustrated in (29)). This is not true of EC predicates, which require that the matrix and embedded event occur at the same location (as in (30)).

- (29) *PC Predicates*
- a. In London, John demanded to go to the gym (**in New York**). **desiderative**
 - b. In London, John wondered whether to go to the gym (**in New York**). **interrogative**
 - c. In London, John regretted going to the gym (**in New York**). **factive**
 - d. In London, John claimed to have gone to the gym (**in New York**). **propositional**
- (30) *EC Predicates*
- a. In London, John managed to go to the gym (***in New York**). **implicative**
 - b. In London, John began to go to the gym (***in New York**). **aspectual**
 - c. In London, John had to go to the gym (***in New York**). **modal**
 - d. In London, John tried to go to the gym (***in New York**). *try*

While all PC predicates permit tense mismatching – as per the generalisation in (26) – they are not uniform in how this tense mismatching is realised. We may in fact split those predicates which permit tense mismatch into sub-groups dependent on the obligatory temporal orientation of their infinitival complements. For example, some PC predicates are *future-oriented*, in that they require *posteriority* of the embedded event; any conflicting temporal modifier in the embedded clause must place the embedded event *after* the matrix event in time (cf. Landau 2000, *et seq.*; Grano 2012, 2015). The desiderative class of PC predicates constitutes one such group of future-oriented verbs. As we see in (31a), the desiderative verb *demand* permits a conflicting temporal modifier in the embedded clause which places the embedded event temporally posterior to the matrix event. However, that same verb bars any conflicting temporal modifiers which place the embedded event prior to the matrix event in time, as illustrated in (31b).

- (31) a. Yesterday, John demanded to leave tomorrow.
 b. *Today, John demanded to leave last week.

Similarly, *past-oriented* PC predicates – such as the factive verbs *regret* and *dislike* – only license conflicting temporal modifiers which yield *anteriority* of the embedded event. That

is, the embedded event must be interpreted as occurring prior to the event named in the matrix clause.

- (32) a. Today, John regretted leaving the city last week.
b. *Today, John regretted leaving the city tomorrow.

2.3.2. Overt embedded subjects

An overt embedded subject refers to any overt lexical DP appearing in subject position of the embedded clause, whether finite or non-finite (in the case of ECM subjects), as demonstrated in (33). I provide the overt embedded subjects generalisation in (34).

- (33) a. Mary hoped that **Bill** would leave the city. **finite complement**
b. Mary hoped for **Bill** to leave the city. **ECM**

(34) *Overt embedded subjects generalisation*

PC predicates permit overt embedded subjects in the embedded clause; EC predicates do not.

Grano (2012, 2015) proposes that the portion of this generalisation which concerns itself with PC predicates follows trivially from the ability of a PC predicate to select a finite complement. Whether or not this is the case, it is true that PC predicates permit overt embedded subjects in either finite complement constructions or ECM constructions (or both).

- (35) a. Mary arranged for **Bill** to leave the city. **desiderative**
b. Mary wondered whether **Bill** would leave the city. **interrogative**
c. Mary was sorry that **Bill** had left the city. **factive**
d. Mary believed that **Bill** had left the city. **propositional**

On the other hand, EC predicates are wholly incapable of taking overt embedded subjects, even in ECM constructions (with or without the help of *for* (Grano 2012, 2015)).

- (36) a. *Mary managed (for) **Bill** to leave the city. **implicative**
b. *Mary continued (for) **Bill** to leave the city. **aspectual**

- c. *Mary had (for) **Bill** to leave the city. **modal**
 d. *Mary tried (for) **Bill** to leave the city. *try*

Grano (2012) further extends this generalisation to an observation made in Landau (2004) concerning Balkan subjunctives. Specifically, Landau identifies two separate types of subjunctives in Greek: (i) the C(ontrol)-Subjunctive, which requires a control relation between the matrix clause and subjunctive clause (see (37a)), and (ii) the F(ree)-Subjunctive, in which the embedded referent is free, and may be overt or covert (37b).

- (37) a. O Yanis tolmise na figi (*o Kostas)
 The Yanis dared PRT leave the Kostas
 ‘Yanis dared (*for Kostas) to leave.’
- b. O Yanis elpizi na figi (o Kostas)
 The Yanis hoped PRT leave the Kostas
 ‘Yanis₁ hoped that he_{1/2}/Kostas will leave.’

GREEK

(Grano 2012:33-34)

Landau (2004) makes the generalisation that PC predicates take F-subjunctives, while EC predicates take C-subjunctives exclusively. While both types of subjunctive clause are finite, only F-subjunctives allow overt embedded subjects. Thus, the overt embedded subjects generalisation is upheld in a language in which the embedded clause is always finite. This observation suggests that the ban on overt embedded subjects in EC constructions (and, subsequently, the allowance of overt embedded subjects in PC constructions) is not tied to clausal structure and is therefore of extreme interest to our investigation into non-clausal, nominal complement constructions.

2.4. Control into complex event nominals

Having outlined the relevant empirical correlates of the EC/PC split, we are now in a position to determine whether or not these correlations exist in the domain of nominal complementation. In this section we will target specifically those NPs which are event-denoting, and which can independently host arguments (complex event nominals, in the sense of Grimshaw 1990). For the sake of brevity, I adopt here the acronym CEN to

describe complex event nominalisations.

Note also that the term ‘PRO’ is employed below and throughout the remainder of the chapter. I employ this term here as a purely notational tool, and make no assumptions concerning the presence of a null syntactic element within infinitival or NP complements. The issue of PRO in controlled complements will be taken up in later chapters.

2.4.1. Probing for control into CENs

Before we diagnose the extent to which the correlates of EC/PC exist in controlled CEN complement constructions, we must first determine whether or not the relations of control observed in the clausal domain are replicated in the nominal domain.

We find immediately that PC predicates do not enforce any observable control relation when selecting a CEN complement. Examples (38a,c,e), involving PC predicates of varying semantic classes, show no control into the selected CEN complement. Compare these data to examples (38b,d,f), which demonstrate the typical partial control relation to which these predicates give rise in infinitival or gerundive complement environments.

- (38) a. John_i {wanted/demanded/planned} [PRO_{i/j/ARB} the inspection of the factory.] **desiderative**
- b. John_i {wanted/demanded/planned} [PRO_{i+/*j/*ARB} to inspect the factory.]
- c. John_i {hated/regretted/disliked} [PRO_{i/j/ARB} the inspection of the factory.] **factive**
- d. John_i {hated/regretted/disliked} [PRO_{i+/*j/*ARB} inspecting the factory.]
- e. John_i {imagined/denied} [PRO_{i/j/ARB} the inspection of the factory.] **propositional**
- f. John_i {imagined/denied} [PRO_{i+/*j/*arb} inspecting the factory.]

Turning now to EC predicates, we find that those predicates of the aspectual and implicative subtype which may take nominal arguments directly enforce an obligatory control relation into CEN complements, as demonstrated in (39a,c). Compare these examples with those in (39b,d), which illustrate the typical obligatory control relation that these predicates enforce into infinitival complements.

- (39) a. John_i {began/resumed} [PRO_i/*j/*ARB the inspection of the factory.] **aspectual**
- b. John_i {began/resumed} [PRO_i/*j/*ARB inspecting the factory.]
- c. John_i managed [PRO_i/*j/*ARB the inspection of the factory.] **implicative**
- d. John_i managed [PRO_i/*j/*ARB to inspect the factory.]

Likewise, the verb *try* enforces an obligatory control relation in both infinitival and nominal complement environments, as illustrated in (40). However, there is a significant shift in meaning in examples involving *try*. Namely, in its clausal complement instantiation, *try* does not entail the completion of the event named in the infinitival clause (see (41a)). When the complement is a CEN, however, *try* does entail that the event named in the nominal has been completed (41b).

- (40) a. The government_i tried [PRO_i/*j/*ARB the abolition of workers' rights.] *try*
- b. The government_i tried [PRO_i/*j/*ARB to abolish workers' rights.]
- (41) a. The government tried to abolish workers' rights, but they didn't actually abolish workers' rights.
- b. *The government tried the abolition of workers' rights, but they didn't actually abolish workers' rights.

The issue of *try*'s entailment patterns across complement domains will be taken up in chapter 6. For now, it is enough to acknowledge that, despite any shift in meaning, both nominal- and infinitival-selecting variants of *try* enforce a control reading in which the subject of *try* is obligatorily interpreted as the implicit subject of the embedded event.

Next, we must determine whether the interpretative control effects observed in (39) and (40) above are indeed exhaustive in nature. To this end, we observe first that the collective modifier *together* is independently licensed in CENs. This holds true of CENs in subject position (see (42a)), as well as in object position under a non-control predicate (42b).

- (42) a. [An examination of this patient together] is required.
- b. The doctor recommended [the examination of this patient together.]

As we know, collective modifiers such as *together* are uniformly barred in EC constructions, due to the strict one-to-one identity relation they enforce. Thus, if the observed control relations in (39) and (40) are indeed exhaustive, then we predict that *together* modifiers will not be licensed in these constructions. This prediction is borne out; the EC predicates in (43) are incompatible with a *together* modifier in the CEN complement.

- (43) a. John began the examination of this patient (*together). **aspectual**
 b. John managed the examination of this patient (*together). **implicative**
 c. The president tried the abolition of workers' rights *try*
 (*together).

We may therefore conclude that constructions involving an EC predicate and a CEN complement involve the same exhaustive, one-to-one control relation that we find in corresponding clausal constructions.

In sum, PC predicates show no obligatory control relation into CENs, while EC predicates of the aspectual and implicative subtypes – as well as the verb *try* – do enforce an obligatory control relation. In the latter cases, this control relation is the same strict, one-to-one relation observed in infinitival constructions. Note that we have omitted in this section discussion on EC predicates of the *modal* subtype. This omission is due primarily to the incompatibility between most modal predicates and direct object NPs (e.g., **John was able the inspection of the factory*). Given that our investigation targets specifically those predicates which demonstrate infinitival and nominal complement variants, we put modal predicates aside for the remainder of this thesis.²

2.4.2. Tense (in)dependence in CENs

In this section, we will demonstrate the extent to which the tense (in)dependence correlation generalises to the domain of nominal complementation. We note first that CENs may generally license a temporal modifier within the DP, and that this modifier may conflict with another overt modifier in the surrounding clause, as illustrated in (44).

² See Wurmbrand 1999; Hacquard 2010; Grano 2012, 2015, a.o. for pertinent discussion regarding modal predicates.

- (44) a. [The examination of this patient **yesterday**] was re-evaluated today.
 b. Yesterday, the doctor recommended [the examination of this patient together **tomorrow**.]

We have seen in section 2.4.1 that EC predicates enforce exhaustive control into CEN complements. Based on the generalisation governing (in)dependent tense (see (26) above), we predict that these predicates will enforce *simultaneity* between the matrix event and the event named by the CEN. This prediction is borne out: the examples in (45) demonstrate that a tense mismatch gives rise to ungrammaticality in EC constructions, in both infinitival and nominal complementation environments.

- (45) a. Yesterday, John {began/resumed} the inspection of the factory **aspectual**
 (***tomorrow**/***the day before**).
- b. Yesterday, John {began/resumed} inspecting the factory
 (***tomorrow**/***the day before**).
- c. Yesterday, John managed the inspection of the factory **implicative**
 (***tomorrow**/***the day before**).
- d. Yesterday, John managed to inspect the factory
 (***tomorrow**/***the day before**).
- e. Yesterday, the government tried the abolition of workers' rights *try*
 (***tomorrow**/***the day before**).
- f. Yesterday, the government tried to abolish workers' rights
 (***tomorrow**/***the day before**).

Grano (2012) notes that the verb *claim*, while classified as a PC predicate, also requires simultaneity when it selects a stative complement (see (46)). As we see in (47), CENs may likewise be compositionally derived from stative adjectival roots (see Borer (2003) for further discussion). As demonstrated in (47d), *claim* may select a de-adjectival CEN so long as the CEN remains indefinite.

- (46) Today, Mary claimed to be happy (***last week**).

- (47) a. John is aware of the issues.
 b. John's awareness of the issues.
 c. John claimed to be aware of the issues.
 d. John claimed {*the/some/∅} awareness of the issues.

In these CEN complement environments, *claim* requires the same simultaneity that we find in stative clausal complement constructions.

- (48) a. Today, John claimed to be aware of the issues (***last week**).
 b. Today, John claimed some awareness of the issues (***last week**).
 c. Today, Mary claimed to be satisfied with the results (***last week**).
 d. Today, Mary claimed some satisfaction with the results (***last week**).

The reader should note that there is a licit interpretation for the conflicting embedded temporal modifier in the examples above: one in which the modifier takes scope over the adjective's internal argument alone (e.g., *Today, John claimed to be aware of **last week's** issues*). This reading persists in *claim* constructions across stative complement types.

Moving on to PC predicates, we saw earlier that PC predicates do not enforce any interpretable control relation into CEN complements. However, the following data show that, despite the lack of observable control effects, PC verbs permit tense mismatch in their NP complements. In fact, the tense mismatch that we find in CEN complement constructions entirely mirrors the temporal orientation of the corresponding clausal complement constructions. Recall that future-oriented control predicates require *posteriority* of the embedded event in relation to the matrix event. The following data demonstrate that those PC predicates which express future-orientation and permit a future-oriented temporal modifier in the infinitival complement also do so in CEN complement constructions (see (49a,b)). Crucially, past-oriented temporal modifiers are uniformly barred across both complement types (49c,d).

- (49) a. Yesterday, John {wanted/demanded/planned} the inspection **desiderative**
 of the factory (**tomorrow**).
 b. Yesterday, John {wanted/demanded/planned} to inspect the
 factory (**tomorrow**).
 c. Yesterday, John {wanted/demanded/planned} the inspection
 of the factory (***the day before**).

- d. Yesterday, John {wanted/demanded/planned} to inspect the factory (***the day before**).

Further, those PC predicates which express past-orientation and permit past-oriented temporal modifiers in the complement clause do so as well in CEN complement constructions (as in (50a,b)). Future-oriented temporal modifiers are uniformly barred in those same environments (50c,d). Note that our investigation of past-oriented PC predicates in these constructions is necessarily constrained to gerund-selecting factive verbs. The vast majority of past-oriented predicates are adjectival (Grano 2015), and cannot support a direct object. However, Pires (2007) convincingly demonstrates that gerundive complements to factive PC verbs are indeed clausal. Thus, for our purposes, gerund-selecting factive verbs will suffice to illustrate the necessary comparison between clausal and non-clausal complement environments.

- (50) a. Today, John {hated/regretted/disliked} the inspection of the factory (**yesterday**). **factive**
 b. Today, John {hated/regretted/disliked} inspecting the factory (**yesterday**).
 c. Today, John {hated/regretted/disliked} the inspection of the factory (***tomorrow**).
 d. Today, John {hated/regretted/disliked} inspecting the factory (***tomorrow**).

As an aside, note that *claim* also requires past-orientation when it selects an eventive clausal complement (e.g., *John claimed to have left*). However, in this instantiation, *claim* also requires overt perfective morphology in the complement (Grano 2015). Since aspectual morphology is unavailable in English noun phrases, we put this variant of *claim* aside.

In sum, the temporal properties of EC/PC predicates in CEN complement constructions are identical to those in clausal complement constructions, regardless of whether any control relation is realised.

2.4.3. Overt embedded subjects in CENs

Since at least Grimshaw (1990), we know that CENs may realise the Agent of the underlying event as a genitive prenominal argument (see (51a)) or in a *by*-phrase adjunct

(see (51b)). Note that unlike what we find in its verbal counterpart, the projection of an Agent with the CEN is entirely optional (as in (51c-e)).

- (51) a. The barbarians' destruction of Rome ...
- b. The destruction of Rome by the barbarians ...
- c. The destruction of Rome ...
- d. The barbarians destroyed Rome.
- e. *Destroyed Rome.

It is debatable as to whether the optional Agent is a possessor which may optionally be interpreted as Agent (Marantz 1997; Alexiadou 1999, 2001) or a true external argument in the most relevant sense (Borer 2003). In either case, its optional presence provides an opportunity to test the overt embedded subjects generalisation within the domain of nominal complement control. As a point of departure, the examples in (52) demonstrate that overt embedded subjects are generally available in CENs when the nominal is in object position.

- (52) a. The doctor observed [**the nurse's** examination of the patient.]
- b. The doctor observed [the examination of the patient **by the nurse.**]
- c. The teacher critiqued [**John's** demonstration of the facts.]
- d. The teacher critiqued [the demonstration of the facts **by John.**]

The data in (53) show that PC predicates permit overt subjects in CEN complements as well, either as prenominal genitive subjects (see (53a,c,e)) or within a *by*-phrase adjunct (53b,d,f). This observation is not surprising: given the lack of control in these constructions, these environments are equivalent to those in (52) as far as overt embedded subjects are concerned.

- (53) a. The public {wanted/demanded} **the council's** immediate investigation of the suspect. **desiderative**
- b. The public {wanted/demanded} the immediate investigation of the suspect **by the council.**
- c. The committee {hated/regretted/disliked} **Congress'** passing of discriminatory legislation. **factive**

- d. The committee {hated/regretted/disliked} the passing of discriminatory legislation **by Congress**.
- e. The president denied **his wife's** negotiation of back-door deals. **propositional**
- f. The president denied the negotiation of back-door deals **by his wife**.

Moving on to EC predicate constructions, we find that the overt embedded subjects generalisation is upheld in the nominal domain. The data in (54) demonstrate that Agent-naming *by*-phrase adjuncts are uniformly barred in CEN complements of EC verbs.

- (54) a. The public {began/continued} the immediate investigation of the suspect (***by the council**). **aspectual**
- b. The committee managed the passing of discriminatory legislation (***by Congress**). **implicative**
- c. The president tried the negotiation of back-door deals (***by his wife**). *try*

At first glance, embedded genitive subjects also seem to fall in line with the generalisation that EC predicates bar overt embedded subjects. The data in (55) show that the projection of such as argument within a CEN complement results in ungrammaticality under any reading in which it is interpreted as Agent.

- (55) a. The public began {the/***the council's**} immediate investigation of the suspect. **aspectual**
(the council = Agent)
- b. The committee managed {the/***Congress'**} passing of discriminatory legislation. **implicative**
(Congress = Agent)
- c. The president tried {the/***his wife's**} negotiation of back-door deals. *try*
(his wife = Agent)

Apparent counterexamples to this claim all have the characteristic that the genitive DP names an entity which stands in an abstract possession relation with the event named by the CEN. For example, consider a context in which the President's advisors have come up with a detailed plan for a city-wide evacuation, and have drafted a detailed, step-by-step guide on how the President could implement their plan. In this case, the utterance in (56a)

is licit, with *his advisors* interpreted as abstract possessors rather than as Agents. Note that the utterance in (56b) remains illicit in this context, as expected on any account of *by*-phrase adjuncts which attribute to them an obligatory agentive interpretation.

- (56) a. The president began his advisor's evacuation of the city. **aspectual**
b. *The president began the evacuation of the city by his advisor.

This phenomenon is systematic across EC predicate types, and dependent only on the interpretation of the prenominal genitive as an abstract possessor/beneficiary rather than an Agent.

To summarise, the generalisation that PC predicates permit overt embedded subjects in their complements while EC predicates do not is upheld in the domain of nominal complementation. The fact that PC predicates permit an overt Agent in either the prenominal genitive position or as a *by*-phrase follows trivially from their lack of any obligatory control relation in this environment. On the other hand, EC predicates uniformly bar any Agent-naming *by*-phrase adjuncts, as well as any genitive DPs which are interpreted as Agents. Finally, as expected if this pattern holds in full generality, EC predicates permit a genitive DP possessor in CEN complements iff the genitive names an abstract possessor or beneficiary of the event denoted by the nominal.

2.5. Control into simple event nominals

Having demonstrated above the extent to which the effects of the EC/PC divide apply to CEN complements, we turn now to constructions involving eventive NP complements which *cannot* host arguments. In this section we investigate whether our observations concerning control into CENs can be generalised to control into SEN complement constructions. We must therefore assess (i) whether EC predicates enforce exhaustive control into SENs while PC predicates show no control in these environments, and (ii) whether the temporal orientation and tense properties of clausal complement constructions are retained in constructions involving SENs/RNs. For the sake of simplicity, we will only consider here those SENs that are clearly and morphologically derived from verbs (i.e., *inspection, investigation, collection, etc.*). The issue of event-denoting NPs with no verbal base will be discussed in section 2.6. Note also that, unlike CEN complements, SENs provide no method of testing the overt embedded subjects generalisation *prima facie*, given their deficient nature (see section 2.1.1), and as such that correlation will not be tested in

this environment.

2.5.1. Probing for control into SENs

In this section we will discuss only those nominals that are compositionally derived from verbs, but do not project internal arguments (thus rendering them SENs in Grimshaw’s (1990) typology). Recall that – by Grimshaw’s classification – any nominalisation that does not project an internal argument is necessarily ambiguous between an SEN and RN reading. Thus, we need to ensure that no RN reading is available in our testing. To this end, we follow Moulton (2014) in assuming that SENs but not RNs are compatible with event modifiers such as *frequent* or *constant* (though this view will be challenged in chapter 4). Note also that true clausal counterparts are impossible for these examples: argument optionality is much more constrained in the verbal domain. We therefore provide the same infinitival examples that we gave in section 2.4.1 for useful comparison of interpretation.

With all this in mind, we find that PC predicates show no control effects into SEN complements, as illustrated in (57). Note that in each example involving an SEN below (examples (57a,c,e)), the ‘frequent inspector’ need not be co-referential with the subject of the PC verb. This observation is expected, given the behaviour of PC predicates in the domain of CEN complement constructions.

- (57) a. John_i { wanted/demanded/planned } [PRO_{i/j/ARB} the frequent inspection.] **desiderative**
- b. John_i { wanted/demanded/planned } [PRO_{i+/*j/*ARB} to inspect the factory frequently.]
- c. John_i { hated/regretted/disliked } [PRO_{i/j/ARB} the frequent inspection.] **factive**
- d. John_i { hated/regretted/disliked } [PRO_{i+/*j/*ARB} inspecting the factory frequently.]
- e. John_i { imagined/denied } [PRO_{i/j/ARB} the frequent inspection.] **propositional**
- f. John_i { imagined/denied } [PRO_{i+/*j/*arb} inspecting the factory frequently.]

Furthermore, although SENs are argued to be incapable of projecting an agentive subject in the prenominal possessor position (Grimshaw 1990; Alexiadou 2001; Fu, Roeper, and Borer 2001; Borer 2003, 2005a), we note that implicit arguments may still be

referenced/asserted in relative clauses (e.g., *the inspection which was carried out by Bill*). The examples in (58) demonstrate that a relative clause adjoined to the SEN may name an implicit Agent which differs from the matrix subject.

- (58) a. John demanded the inspection (which would be carried out by Bill). **desiderative**
 b. John regretted the inspection (which was carried out by Bill). **factive**
 c. John imagined the inspection (which was carried out by Bill). **propositional**

EC predicates, on the other hand, do enforce an obligatory control relation into SEN complements, as shown in (59). The event modifier *frequent* is once again employed in order to block any potential result reading.

- (59) a. John_i {began/resumed} [PRO_{i/*j/*ARB} the frequent inspection.] **aspectual**
 b. John_i {began/resumed} [PRO_{i/*j/*ARB} inspecting the factory frequently.]
 c. John_i managed [PRO_{i/*j/*ARB} the frequent inspection.] **implicative**
 d. John_i managed [PRO_{i/*j/*ARB} to inspect the factory.]

Likewise, relative clauses which name the underlying Agent of the SEN complement are barred in EC constructions, as demonstrated in (60). This behaviour contrasts directly with the behaviour of relative clauses in PC complement environments (see (58)) and suggests that an obligatory control relation is (at least interpretatively) active in EC predicate + SEN constructions.

- (60) a. John began the inspection (*which was carried out by Bill). **aspectual**
 b. John managed the inspection (*which was carried out by Bill). **implicative**

Furthermore, the EC predicate *try* behaves identically in the environment of compositionally derived SENs as it does in the environment of CEN complements. In example (61), we find that the implicit subject of the SEN complement is obligatorily controlled by the subject of *try*. In order to make the intended reading of (61 a) more salient, we provide an optional rationale clause modifying the matrix VP.

- (61) a. The company_i tried [PRO_{i/*j/*ARB} the/an inspection] (in order to ensure a quality product.) **aspectual**
- b. The company_i tried [PRO_{i/*j/*ARB} to inspect the factory] (in order to ensure a quality product.)

Note that the entailment pattern in (61a) is different from that in (61b). Just as was observed in CEN complement constructions, (61a) entails that the event denoted by the SEN (namely, an inspecting event) was completed. Conversely, completion of the event denoted by the infinitive in (61b) is not entailed.

Finally, we find in (62) that any agent-naming relative clauses adjoined to the SEN complement of *try* once again give rise to ungrammaticality, thereby providing further evidence that the interpretative control effect associated with *try* in the clausal domain is present here as well.

- (62) John tried {the/an} inspection (*which was carried out by Bill). *try*

Finally, we may demonstrate the same principle of strict one-to-one identity found in EC clausal constructions obtains in SEN complement environments. First, in example (63) we find that *together* modifiers are generally available in SENs, in both subject and object positions. In (64a), we demonstrate that SENs selected by PC predicates may likewise license a *together* modifier within the SEN. Then in example (64b), we see that SEN complements to EC predicates are predictably incompatible with the modifier *together*.

- (63) a. [An inspection **together**] would be preferable.
 b. I would prefer [an inspection **together**.]
- (64) a. John promised [{the/an} inspection (**together**).] **desiderative**
 b. John managed [{the/an} inspection (***together**).] **implicative**

In sum, we see the same EC/PC relations in SEN complement constructions as we do in CEN complement constructions. That is, PC predicates show no control into SENs, while EC predicate enforce exhaustive control into those same complements.

2.5.2. Temporal orientation in SENs

Moving on to the temporal properties of SEN constructions, we first note that SENs are independently capable of taking a temporal modifier within the NP (see (65a)), and that these modifiers may conflict with any temporal modifiers in the matrix clause (as in (65b)).

- (65) a. [An inspection **tomorrow**] would be preferable.
b. This afternoon I set up [an inspection **tomorrow**.]

Beginning with those predicates which enforce simultaneity, the following data show that all EC predicates which can take direct objects uniformly bar any conflicting temporal modifier within the SEN (as in (66a,c,e)). Once again, this behaviour mirrors that of clausal EC constructions (see (66b,d,f)).

- (66) a. Yesterday, John {began/continued} the inspection **aspectual**
(***tomorrow**/***the day before**).
- b. Yesterday, John {began/continued} to inspect the factory
(***tomorrow**/***the day before**).
- c. Yesterday, John managed the inspection (***tomorrow**/***the day before**) **implicative**
- d. Yesterday, John managed to inspect the factory
(***tomorrow**/***the day before**).
- e. Yesterday, John tried an inspection (***tomorrow**/***the day before**) *try*
- f. Yesterday, John tried to inspect the factory (***tomorrow**/***the day before**).

Similarly, those predicates which require *posteriority*, and permit future-oriented temporal modifiers in clausal and CEN complement constructions, do so as well in SEN complement environments (as in (67a,b)). Crucially, for these predicates, past-oriented temporal modifiers are likewise banned across complement types (67c,d).

- (67) a. Yesterday, John {wanted/demanded/planned} the inspection **desiderative**
(**tomorrow**).
- b. Yesterday, John {wanted/demanded/planned} to inspect the

- factory (**tomorrow**).
- c. Yesterday, John {wanted/demanded/planned} the inspection
(***the day before**).
- d. Yesterday, John {wanted/demanded/planned} to inspect the
factory (***the day before**).

Finally, those control predicates which require *anteriority* and permit past-oriented temporal modifiers in clausal and CEN environments also allow them in SEN complements. Again, for these verbs, future-oriented temporal modifiers are banned across complement domains.

- (68) a. Today, John {hated/regretted/disliked} the inspection **factive**
(**yesterday**).
- b. Today, John {hated/regretted/disliked} inspecting the factory
(**yesterday**).
- c. Today, John {hated/regretted/disliked} the inspection
(***tomorrow**).
- d. Today, John {hated/regretted/disliked} inspecting the factory
(***tomorrow**).

Overall, the temporal orientation of a control predicate is retained in SEN complement constructions, regardless of presence or absence of control.

2.6. On RNs, conversions and light verb constructions

Unlike nominals such as *inspection* or *investigation*, there is a subset of English event-denoting NPs that offer no apparent evidence of a derivational process of nominalisation. Some of these nouns are thought to involve a process of conversion or zero-derivation (Lieber 1992; Don 1993; Beard 1995). Others are generally referential in nature, and take on systematic eventive interpretation only in so-called ‘light verb constructions’ (see a. o. (Grimshaw and Mester 1988; Kearns 1988; Butt 2010)). Finally, some acquire certain event-like meaning components idiosyncratically (Grimshaw’s (1990) RNs, Borer’s (2003) R-nominals) but never compositionally. In this section we will consider these classes of nominals and assess their behaviour in the presence of EC and PC predicates.

2.6.1. Grimshaw's RNs

We note first that all the SENs discussed in the previous section are systematically ambiguous between SEN and RN. As we see in example (69a), the SEN reading can be disambiguated by enforcing an eventive context with predicates such as *take x hours*. Moreover, in (69b) we see that an RN reading may be disambiguated by enforcing a suitably non-eventive context, employing predicates such as *x is on the table* (Grimshaw 1990).

- (69) a. The examination took three hours. SEN
b. The examination was on the table. RN

One potentially significant observation comes from the fact that ambiguous nominals of the sort in (69) remain ambiguous when selected by PC predicates. For example, the desiderative verb *demand* in (70a) may yield an interpretation such as in (70b) in which the examination is read as an event. Likewise, it may yield an interpretation as in (70c), in which the examination is understood to be a non-eventive, referential entity.

- (70) a. John demanded the examination.
b. \Rightarrow John demanded that the examination occur.
c. \Rightarrow John demanded that he possess the examination.

However, when an ambiguous nominal such as *examination* is selected by an EC predicate, the resulting possible interpretations are very different. For example, using the implicative EC verb *manage*, we find that the simple construction in (71) has only one interpretation. That is, the nominal complement is disambiguated; it can only have an SEN reading (as in (71b)). A non-eventive RN reading of the nominal complement is unavailable (see (71c)).

- (71) a. John managed the examination.
b. \Rightarrow John managed to perform the examination.
c. \nRightarrow John managed to possess the examination.

The situation with aspectual EC predicates differs from implicatives: some aspectual predicates such as *begin* permit both SEN and RN readings of ambiguous nominal complements. However, the RN reading necessarily involves coercion, and is particular to

these specific environments. For example, the *begin* construction in (72a) most readily yields an SEN interpretation of the selected nominal (as in (72b)). As we see in (72c), an RN reading is available as well, though it necessarily involves coercion of the object into a structured individual (for pertinent discussion on aspectual coercion, see Piñango and Deo 2016). Any attempt to interpret the nominal as an RN outside of this coerced reading is impossible, as in (72d).

- (72) a. John began the examination.
b. \Rightarrow John began to perform the examination.
c. \Rightarrow John began to complete the examination (form).
d. \nRightarrow John began to possess the examination (form).

Of course, not all event-denoting nominals have verbal bases. Nouns such as *trip* or indeed *event* are both event-denoting, in the sense that they are compatible with predicates such as *take x time*, as illustrated in (73). While these nouns constitute SENs in Grimshaw's (1990) system, Borer (2003, 2014) labels them as R-nominals.³

- (73) a. The trip took three months.
b. The event lasted for two weeks.

Critically, when selected by EC predicates, these event-denoting noun phrases behave drastically different from the SENs discussed in section 2.5 above. To illustrate, consider the examples in (74), once again involving the implicative EC verb *manage*. As we see in (74b,c), the subject of *manage* may be interpreted as either the agent of a *recital* event, or rather as a bystander/observer (if, for example, the performance was difficult to sit through).

- (74) a. John managed the recital.
b. \Rightarrow John managed to perform the recital.
c. \Rightarrow John managed to sit through the recital.

This observation stands in stark contrast with those made of morphologically de-verbal

³ For Borer, any nominal that does not project its internal argument is necessarily an R-nominal, including those that are overtly derived from verbal bases. One of the core objectives of chapter 4 will be to refute this claim, and to provide a more fine-grained analysis of non-argument-projecting English nominals.

SEN complement constructions, in which the interpretation of the subject of *manage* was fixed within the nominal event. This observation will be critical to the compositional approach to English nominalisation put forward in chapter 4.

2.6.2. Conversion/zero-derivation

Like RNs, conversions seem to constitute a very heterogenous class within the English nominal system. For the purposes of this thesis, we will abstract away from the morphological principles that constrain conversion/zero-derivation, though for pertinent discussion see a.o. Lieber (1992, 2004); Don (1993, 2004), and Ackema and Neeleman (2004). We will begin instead with the observation from (Harley 2009) that conversion does not rule out the possibility of CEN formation. Consider the handful of examples in (75), each of which involves a zero-derived nominalisation, and in each case an internal *of*-argument is present and the event modifier *frequent* is licensed.

- (75) a. The frequent rape of women in Darfur ...
b. The frequent repair of the motorcycle ...
c. The frequent murder of journalists ...
d. The frequent capture of illegal immigrants ...
e. The frequent defeat of the Korean forces ...
f. The frequent practice of good brushing habits ...
g. The frequent meltdown of the reactor ...

(adapted from Harley 2009:340)

In chapter 4 we will consider examples such as these in greater detail, as well as the relevance of event modification as a diagnostic. However, compatibility with an internal *of*-argument corresponding to the internal argument of a verbal counterpart renders these types of event-denoting conversions applicable for testing control phenomena in nominal complement environments. To this end, we begin with the observation that – just as in CEN and SEN complement constructions – PC predicates show no obligatory control into conversion nominals.

- (76) a. John_i { wanted/demanded/planned } [PRO_{i/j/ARB} the defeat of **desiderative**
the Korean forces.]

- b. John_i { wanted/demanded/planned } [PRO_{i+/*j/*ARB} to defeat the Korean forces.]
- c. John_i { hated/regretted/disliked } [PRO_{i/j/ARB} the defeat of the Korean forces.] **factive**
- d. John_i { hated/regretted/disliked } [PRO_{i+/*j/*ARB} defeating the Korean forces.]
- e. John_i { imagined/denied } [PRO_{i/j/ARB} the defeat of the Korean forces.] **propositional**
- f. John_i { imagined/denied } [PRO_{i+/*j/*ARB} defeating the Korean forces.]

In contrast, we find that EC predicates do in fact enforce an obligatory control interpretation into these conversion nominals, as illustrated in (77). That is, in (77a,c) *John* is obligatorily interpreted as the Agent of the defeating event named in the nominal.

- (77) a. John_i { began/continued } [PRO_{i/*j/*ARB} the defeat of the Korean forces.] **aspectual**
- b. John_i { began/continued } [PRO_{i/*j/*ARB} to defeat the Korean forces.]
 - c. John_i managed [PRO_{i/*j/*ARB} the defeat of the Korean forces.] **implicative**
 - d. John_i managed [PRO_{i/*j/*ARB} to defeat the Korean forces.]

The same pattern applies to those conversions that license only so-called ‘oblique’ arguments (in the sense of (Radford 1988), see also (Moore and Perlmutter 2000; Sigurðsson 2002) for discussion on oblique or ‘quirky’ subjects). For example, verbs like *look* cannot take an argument directly, but may do so with the help of prepositions or particles, as illustrated in (78a,b).⁴ We find that, in cases of zero-derived nominalisation, these same predicates may realise their oblique arguments within the noun phrase (see (78c,d)).

- (78) a. John carefully looked *(at) the documents.
 b. Mary recently journeyed *(to) Nebraska.

⁴ Note that there is an instantiation of *look* in which a direct object may be taken, e.g., *the actor looked the part*. Given that the *actor* in this example is not actually the one doing any *looking*, we set this example aside as idiomatic and unrepresentative of the predicate’s core grammatical properties.

- c. John's careful look (at the documents) ...
- d. Mary's recent journey (to Nebraska) ...

Furthermore, we find that the observations made thus far concerning EC/PC relations into nominal complements hold too in these environments. As we see in (79), PC predicates such as desideratives do not enforce any relation of control into conversion nominals such as *journey*. On the other hand, EC predicates do enforce an exhaustive control relation in these contexts (see (80)).

- (79) a. John_i { wanted/demanded/planned } [PRO_{i/j/ARB} the journey to Nebraska.] **desiderative**
- b. John_i { wanted/demanded/planned } [PRO_{i+/*j/*ARB} to journey to Nebraska.]

- (80) a. John_i managed [PRO_{i/*j/*ARB} the journey to Nebraska.] **implicative**
- b. John_i managed [PRO_{i/*j/*ARB} to journey to Nebraska.]

Next, with both *of*-argument projecting conversions as well as conversion that take oblique arguments, the temporal properties of the selecting control predicate are maintained. For example, simultaneous EC predicates enforce simultaneity into both types of conversion nominal complement.

- (81) a. Yesterday, John {began/continued} the defeat of the Korean forces (***tomorrow/*the day before**). **aspectual**
- b. Yesterday, John {began/continued} the journey to Nebraska (***tomorrow/*the day before**).
- c. Yesterday, John managed the defeat of the Korean forces (***tomorrow/*the day before**). **implicative**
- d. Yesterday, John managed the journey to Nebraska (***tomorrow/*the day before**).

Using our desiderative class of PC predicates, we can likewise construct examples that demonstrate that future-oriented predicates enforce future-orientation in conversion complement constructions. As we see in (82a,b), future-oriented temporal modifiers are licensed in these environments, while past-oriented modifiers are blocked (see (82c,d)).

- (82) a. Yesterday, John {demanded/planned} the defeat of the Korean forces (**tomorrow**). **desiderative**
- b. Yesterday, John {demanded/planned} the journey to Nebraska (**tomorrow**).
- c. Yesterday, John {demanded/planned} the defeat of the Korean forces (***the day before**).
- d. Yesterday, John {demanded/planned} the journey to Nebraska (***the day before**).

Furthermore, as illustrated in (83), we find that past-orientation is also maintained in these conversion complement environments by those predicates that require it in the clausal domain (in this case, factives). Specifically, we see in (83a,b) that conflicting past-oriented modifiers are licensed within the conversion nominal. Compare this observation with the examples in (83c,d), in which a conflicting future-oriented temporal modifier results in ungrammaticality.

- (83) a. Today, John {hated/regretted/disliked} the defeat of the Korean forces (**yesterday**). **factive**
- b. Today, John {hated/regretted/disliked} the journey to Nebraska (**yesterday**).
- c. Today, John {hated/regretted/disliked} the defeat of the Korean forces (***tomorrow**).
- d. Today, John {hated/regretted/disliked} the journey to Nebraska (***tomorrow**).

Lastly, given that by Grimshaw's (1990) classification the presence of an *of*-argument obligatorily renders the nominal a CEN, the conversion nominals in (75) provide us with another opportunity to test the overt embedded subjects correlation in the nominal domain. As we saw with derivationally transparent CENs in section 2.4.3, CEN complements to PC predicates will permit overt interpretative Agents within the CEN, in both prenominal genitive position and in a *by*-phrase adjunct. Conversely, CEN complements to EC predicates do not, though they do permit abstract possessors/beneficiaries in that prenominal slot. To begin, we note in (84) that these *of*-argument projecting conversion nominals may indeed take an Agent as either a prenominal genitive (see (84a,b)), or as a

by-phrase (84c,d).

- (84) a. The regime's deliberate murder of journalists ...
b. The border patrol's deliberate capture of illegal immigrants ...
c. The deliberate murder of journalists by the regime ...
d. The deliberate capture of illegal immigrants by the border patrol ...

When selected by a PC predicate such as those in the factive class, we find that overt Agents are still available in these same positions within the conversion nominal.

- (85) a. The government regretted the regime's deliberate murder of journalists. **factive**
b. The petitioners disliked the border patrol's deliberate capture of illegal immigrants.
c. The government regretted the deliberate murder of journalists by the regime.
d. The petitioners disliked the deliberate capture of illegal immigrants by the border patrol.

When selected by an EC predicate, on the other hand, overt Agents become ill-formed within the conversion nominal complement. As we see in (86a,b), *by*-phrases that name an Agent are systematically barred in this environment. Likewise, any prenominal genitive interpreted as an Agent gives rise to ungrammaticality (see (86c,d)). Note here that the expected alternative interpretation for prenominal genitives (either as abstract possessor or beneficiary) is present in these contexts.

- (86) a. The government began the deliberate murder of journalists **aspectual**
(*by the regime).
b. The petitioners began the deliberate capture of illegal immigrants (*by the border patrol).
c. #The government began the regime's murder of journalists.
d. #The petitioners began the border patrol's capture of immigrants.

Thus, the observations made about CENs and SENs in section 2.4 and 2.5 apply wholesale

to conversion nominal complements. This includes both those which project an *of*-argument, as well as those which take so-called oblique arguments.

2.6.3. Light verb nouns

Unlike the RNs and conversions discussed above, the term light verb noun (henceforth LVN) is particular to a nominal appearing in a particular syntactic frame, namely a light verb construction (cf. Grimshaw and Mester 1988; Kearns 1988; Butt 2010, a.o.). The examples below provide a basic overview of light verb constructions in English, involving the light verbs *give*, *do*, *have* and *take*.

- (87) a. Mary gave the dog a bath.
b. John did a dance.
c. Bill had a coffee.
d. Susan took a shower.

The LVNs involved in these constructions are once again varied in nature: some constitute potential conversion nominals, such as *dance* and *shower*, while others are clearly nominal in nature, such as *bath* and *coffee*. However, each LVN inherits an eventive interpretation when selected as an argument of a light verb.

There are some similarities between LVNs and the nominal complements of control predicates. For instance, in each case in (87) the overt subject of the light verb is interpreted as the implicit subject of the event denoted by the LVN. For instance, *Mary* in (87a) is both the giver and the bather. It is this observation that motivated Bruening's (2015) control analysis of light verb constructions. Furthermore, while temporal modifiers are indeed possible inside LVNs (as illustrated by (88)), we find that within the context of a light verb construction, LVNs are prohibited from including any conflicting temporal modifiers (see (89)). This restriction to simultaneity puts light verbs potentially in line with EC predicates.

- (88) a. Today I desire [_{DP} a hot bath tomorrow.]
b. [_{DP} A dance on Friday] caused my back to go out on Saturday.
- (89) a. Today, Mary gave the dog a bath (***tomorrow/*the day before**).
b. Today, John did a dance (***tomorrow/*the day before**).

However, it is unclear whether the nature of LVNs falls under the scope of the current project. Recall that we are interested primarily in the properties of obligatory control predicates in the domain of nominal complementation. While light verbs and light verb constructions certainly share some *prima facie* control-like properties with *bona fide* obligatory control verbs, there is little evidence to suggest they are conventional control predicates (but cf. Bruening 2015). Furthermore, any investigations of LVNs seems to be conceptually constrained to light verb constructions specifically. That is, once an LVN is removed from a light verb construction, does it cease to be an LVN? Are LVNs special and distinct from other event-denoting nouns, or can an LVN remain just as ‘eventive’ in other, non-light verb related contexts? A cursory examination of so-called LVNs in control verb constructions seems to suggest that a coerced eventive interpretation may be more generally available to even the most referential noun (e.g., *John managed a quick coffee before work*).

The nature of light verbs and LVNs, both in English and cross-linguistically, is a topic meriting its own dissertation. As such, our investigation and subsequent theoretical formulations will not take light verbs and LVNs into consideration.

2.7. Key generalisations

Considering the data presented in this section regarding the effects of EC/PC into nominal complements, we may first generalise that the effects of EC/PC, as they apply in the domain of nominal control, apply identically to both CEN and SEN complements. That is, the effects of EC/PC (excluding the realisation or restriction of embedded genitive subjects) apply regardless of the argument projecting capabilities of the nominal complement. Additionally, we saw that event-denotation was not enough to induce an obligatory control relation. Instead, the event denoted by the nominal had to be inherited from an underlying verbal base.

The data converge to yield three key generalisations concerning control into NPs and the EC/PC divide.

(90) *Control into NP generalisation*

Exhaustive control predicates enforce exhaustive control into de-verbal, eventive NP complements; partial control predicates show no control into NP complements.

(91) *Temporal orientation in NP*

The temporal properties of NP complements mirror those of the corresponding clausal complement, and temporal orientation (where applicable) is identical across these complements.

(92) *Overt nominal subjects under control*

Complex event nominal complements to PC predicates may project an Agent either as a genitive prenominal argument or in a *by*-phrase adjunct; complex event nominal complements to EC predicates may *not* project an Agent in either position, though they may name an abstract possessor in the genitive prenominal position.

The generalisations in (90) through (92) constitute empirical correlates of the EC/PC divide in the nominal domain, and thus motivate an analysis in which control into NPs is the same phenomenon as control into clauses. The remainder of this thesis will explore to what extent current theories of control – either in their present state or through some suitable extension – can account for the generalisations above. In addition, novel analyses will be advanced, specifically for aspectual predicates and the verb *try*. The overarching goal in addressing these issues should be a theory of control which uniformly derives the correct control/tense properties across complement types.

3. THEORETICAL PRELIMINARIES

3.1. Introduction

Having demonstrated in chapter 2 the extent to which the EC/PC split exists in the domain of nominal complements, this chapter will be primarily focused on examining a number of contemporary control theories with this new data in mind. Specifically, we seek to determine which models of control can best account for the *control into NP* generalisation, and which models are weakened by it.

In section 3.2 we begin by considering those models in which relations of control are derived via movement. These approaches include the Movement Theory of Control (henceforth, the MTC) (Hornstein 1999; Boeckx and Hornstein 2003, 2004, 2006a, 2006b; Hornstein and Polinsky 2010), as well as Grano's (2012, 2015) hybrid account of exhaustive and partial control. In 3.3 we consider the distribution of PRO in the nominal system, and any difficulties a PRO-based account might face in explaining the generalisations made in chapter 2. Section 3.4 considers purely semantic approaches to control and the application of such approaches to the phenomenon of NP control. In each of the above cases, we find that these models of control either over- or under-generate with regards to control into nominal complements. In section 3.5 we explore the proposal in Wurmband (2002), in which exhaustive and partial control correspond to a split between semantic and syntactic mechanisms, respectively. We conclude here that, given certain assumptions regarding the eventivity of English nominalisations, Wurmband's proposal predicts the *control into NP* generalisation *in toto*. We conclude in section 3.6.

3.2. Movement-based theories of control

3.2.1. The MTC

In its more-or-less standard variant, the MTC does away with the θ -criterion (in the sense of Chomsky 1982) and derives both raising and control phenomena via a single operation: A-movement (Hornstein and Polinsky 2010). Utilising Chomsky's (1993) copy theory of movement, the examples in (20) demonstrate the main claim of the MTC.

- (93) a. John seemed [~~John~~ to kiss Mary.]
b. John tried [~~John~~ to kiss Mary.]

The verb *seem* in (20a) is a canonical raising verb, and does not assign a θ -role to its subject. Hence, *John* in (20a) is only ever a *kisser*. In (20b), however, *John* is both a *trier* and a *kisser*, seemingly receiving a θ -role from both the matrix and embedded predicate.

Turning now to control into NP constructions, we find that an A-chain relation between a matrix subject and a prenominal genitive is unmotivated in English in view of two independent properties of the English grammar: (i) the inability of the English DP to project a determiner and a possessor simultaneously, and (ii) the lack of licit ‘possessor-raising’ constructions in English. As illustrated in (94), the English DP may project either a determiner (94a) or a genitive DP (94b). However, projecting both simultaneously results in a derivational crash, as we see in (94c).

- (94) a. John asked to borrow [DP {the/a} book.]
 b. John asked to borrow [DP Mary’s book.]
 c. *John asked to borrow [DP {Mary/Mary’s} the book.]

The fact that determiners and possessors are in complementary distribution in English is not a new observation (see a.o. Abney 1987).

The second factor concerns the lack of possessor-raising in English. Deal (2013a, 2013b) convincingly demonstrates that external possession in languages such as Nez Perce is derived by A-movement, with the possessor unable to receive case within the DP (see (95a)). Similarly, Deal (2013b) proposes that external possession construction in German of the type in (95b) instantiate a kind of control relation between the affected dative argument (*der Nachbarin*) and the implicit possessor of the object. For Deal, this control relation is derived via the MTC, with the possessor moving from the DP internal genitive θ -position, and into the affected argument position, receiving an additional θ -role.

- (95) a. *pro* ‘e-ex-ney-se- \emptyset tewlike-ne_i [DP t_i saq’is.]
 pro 3OBJ-see- μ -IMPERF-PRES tree-OBJ shadow.NOM
 ‘I see the tree’s shadow.’

(NEZ PERCE: Deal 2013b)

- b. Tim hat der Nachbarin_i [DP t_i das Auto] gewaschen.
 Tim has the neighbour.DAT.FEM the car washed
 ‘Tim washed the neighbour’s car.’

(GERMAN: Lee-Schoenfeld 2006)

Unlike the possessor constructions in (95), Deal argues that English possessors must be assigned (genitive) case within the DP. Thus, an English external possession construction involving A-movement of a prenominal possessor to a case position is impossible (see (96a)). Instead, the only possible external possession construction in English involves base-generated binding (as in (96b)).

- (96) a. *Tim washed the neighbour_i [_{DP} t_i the car.]
b. The neighbour_i asked Tim to wash [_{DP} her_i car.]

The observations made in examples (94-96) suggest that the prenominal genitive possessor position within the English DP is not a licit launching site for A-movement.

Returning now to our *control into NP* generalisation, the MTC *prima facie* predicts that neither EC nor PC will obtain into nominal complements, *contra* the data in chapter 2. Example (97) illustrates that in order to derive the licit EC construction in (97a), any movement-based theory of control would have to posit the structure in (97b) as its starting point, with the determiner and possessor occurring simultaneously prior to movement. Likewise, the derivation of the structure in (97a) must employ a kind of possessor raising, a mechanism otherwise unattested in English.

- (97) a. John managed [_{DP} the inspection of the factory.]
b. #managed [_{DP} John the inspection of the factory.]

However, while the observations in (94-97) do not support a movement-based approach to control into NP, they do not rule one out entirely. It is entirely possible that the construction exemplified in (97) constitutes the single syntactic environment in English in which determiner/possessor complementarity may be obviated, and in which A-movement of a possessor to a matrix case position is employed. Even in this possible world, the MTC must contend with the lack of any salient possessor interpretation of the matrix subject in control into NP constructions. One of the core tenets of the MTC is the removal of the θ -criterion, such that a single argument may have more than a single θ -role (recall our example in (20b)). Note also that, unlike their corresponding verbs, the subject of English deverbal nominalisations need not be interpreted as an Agent (Kratzer 1996, *contra* Grimshaw 1990). For example, *Maria* and *Anna* in example (98) are compatible with both agentive interpretations as well as something like a beneficiary interpretation (in which *Maria* and

Anna are attending two separate reading events).

- (98) Maria's reading of *Pride and Prejudice* received better reviews than Anna's.
(Kratzer 1996:128)

We should expect, then, that if control into NP is derived via movement, that these different θ -marking possibilities will be reflected in the final interpretation of the matrix subject. For example, *Maria* in (99a) should be compatible with two distinct interpretations: (i) an interpretation in which she is the agent of a *begin* event and the agent of a *reading* event, and (ii) an interpretation in which she is the agent of a *begin* event and the beneficiary of a *reading* event. However, this latter interpretation is unavailable.

- (99) a. Maria began the reading of *Pride and Prejudice*.
b. \Rightarrow Maria began to carry out the reading of *Pride and Prejudice*.
c. \nRightarrow Maria began to attend the reading of *Pride and Prejudice*.

In sum, there is sufficient reason to suggest that the prenominal genitive possessor position in English is resistant to extraction via A-movement. Furthermore, a movement-based theory of control does not accurately reflect the interpretative possibilities of control into NP constructions. It is therefore the case that the MTC under-generates in the environment of control into nominal complements: it correctly predicts the lack of PC in these environments but fails to predict the manifestation of EC in those same environments.

3.2.2. Grano (2015)

Grano's (2012, 2015) model of EC also exploits A-movement, and runs into the same issues discussed in section 3.2.1 concerning the MTC. However, for Grano, EC structures do not involve two verbal lexical projections, but instead instantiate a mono-clausal structure in which the control predicate is a functional head within the inflectional layer of the clause.

Rooted within the framework of the cartography project (Cinque 2006), Grano's proposal maintains that an EC predicate is a functional head within IP, and that the 'embedded' clausal complement is indeed the matrix predicate. As exemplified in (100), the v P internal subject moves across this functional head to receive Nominative case, thereby deriving the correct surface order. Here, we abstract away from the specific inflectional projection in which the EC predicate appears, and use instead the label FP.

(100) John_i [_{FP} managed [_{vP} t_i to eat the soup.]]

The main motivation for this analysis comes from the following empirical observations: (i) EC predicates cannot select tensed complements, (ii) EC complements may not take an overt embedded subject, and (iii) EC predicates (generally) restructure in languages which allow restructuring.

However, given our *control into NP* generalisation, the presence of EC in nominal complement constructions presents a non-trivial problem for this model beyond even the issues with proposing A-movement out of prenominal genitive positions. Specifically, Grano's approach to EC would seem to necessitate the stipulation that all EC predicates can also be realised as lexical verbs. After all, when an EC predicate controls into an NP, it must presumably select that NP in a head-complement relation. This behaviour is not typical of modal or auxiliary heads of the extended inflectional projection. Therefore, in order to account for the obligatory EC we see in NP complement constructions, Grano's model must maintain that EC predicates are systematically lexically ambiguous. In the environment of non-finite verbal complements, they manifest as functional heads in IP, and the interpretative control relation is derived via A-movement (as in (101a)). In the environment of NP complements, they manifest as lexical verbs in VP, in which case the control relation must be derived by some other mechanism (perhaps with a controlled PRO subject, see (101b)).

(101) a. Bill_i [_{FP} began [_{vP} t_i to inspect the factory.]]

b. Bill_i [_{vP} began [_{DP} PRO_i the inspection of the factory.]]

The added complexity of such an approach renders Grano's model less attractive in deriving control effects uniformly across complement types.

3.3. Control and PRO

In this section we will consider those models which exploit the null anaphor PRO as a primary component in the derivation of control. These include binding theories of control (Manzini 1983; Lebeaux 1984; Sag and Pollard 1991, a.o.), some predicational accounts of OC (Williams 1980, 1987; Clark 1990) as well as Agree-based frameworks (Landau 2000, 2004, 2006, 2008; Sundaresan and McFadden 2009; van Urk 2011, a.o.). While each of the

frameworks above is considerably different than the others – and indeed, each shows great variation from author to author – they all count PRO as a necessary component in the derivation of OC. As such, we will not be comparing the efficacy of each control model individually in the domain of nominal complementation. Rather, our goal will be to determine whether a PRO-based theory of control can correctly predict the empirical asymmetry between EC and PC in these novel environments.

3.3.1. The PRO in DP

The presence of a *bona fide* null anaphoric PRO within the DP is a contentious issue among control scholars. Williams (1982, 1985) presents a number of arguments militating against an analysis of the English noun phrase that includes a controlled PRO. First, Williams notes that apparent control relations may be realised differently in NP complements than in more canonical control complements, such as gerunds. For example, as we see in (102a,b) gerundive PRO must be controlled by the matrix subject. Thus, in the case of (102b) the only reading available is the highly suspicious interpretation in which the subject *you* is understood to be desiccating. This is not the case for NP PRO, which may be controlled by either a subject or an object (102c,d).

- (102) a. The leaves_i should not be bothered [while PRO_i desiccating.]
 b. #You_i should not bother the leaves_j [while PRO_{i/*j} desiccating.]
 c. The leaves_i should not be bothered [during PRO_i desiccation.]
 d. You_i should not bother the leaves_j [during PRO_{i/j} desiccation.]

Williams furthermore points to cases of apparent control *by* an NP PRO to illustrate the problems with an NP PRO analysis. For example, in (103) we understand that the implicit *attempter* argument is simultaneously the *leaver* argument of the infinitival complement. This might be naturally accounted for by positing control of the infinitival PRO by an arbitrary PRO in prenominal position.

- (103) Any PRO_i attempt [PRO_i to leave] ...

Williams points out that the interpretation of the infinitival subject remains constant even as the prenominal position of the NP *attempt* is filled by modifiers such as *yesterday* (as in (104a)). Furthermore, control of the infinitive is not tied to any one syntactic configuration;

the *attempter* and *leaver* are always co-referential, regardless of whether or not the *attempter* is implicit (104b), explicit in prenominal position (104c) or explicit in a *by*-phrase adjunct (104d).

- (104) a. Yesterday's attempt to leave ...
- b. Any attempt to leave ...
- c. Their attempt to leave ...
- d. Yesterday's attempt by them to leave ...

Williams extends these observations to cases of apparent principle C violations. For example, Ross (1969) argues explicitly for a PRO in the prenominal position in the English NP based on the obligatory disjointed reference between the implicit *realiser* (denoted by PRO) and *John* in example (105). Given principle C of the binding theory (Chomsky 1981, 1982, 1986), disjoint reference is accounted for by positing a PRO in the NP specifier position.

- (105) The PRO_{i/*j} realisation that John_j was unpopular upset him_{i/j/k}.

Again, Williams points to similar observations of disjoint reference in cases in which the prenominal possessor position is filled, as in (106). In this case, PRO cannot be responsible for the observable principle C-like effect, such that *John* and the implicit subject of *realisation* (notated with relevant subscripts attached to the nominal itself) cannot be the same entity.

- (106) Yesterday's realisation_{i/*j} that John_j was unpopular upset him_{i/j/k}.

The relevance of these data are rightly questioned in Landau (2013), in which the author invokes Roeper's (1993) observations that the presence of a prenominal genitive modifier does not rule out the presence of a prenominal genitive argument. As we see in (107), the presence of a temporal modifier in the prenominal genitive position does not preclude the presence of the prenominal genitive argument *man*. This observation opens up the possibility that (106) contains a covert argumental PRO alongside the prenominal temporal modifier.

- (107) One man's week's work is another man's year's achievement.

Despite the objections raised in Williams (1985), there are a number of empirically robust observations that point to the presence of a syntactic PRO within the DP. For example, it is well known that secondary predicates require overt syntactic DP arguments in order to be saturated; implicit arguments cannot saturate secondary predicates, as in (108a,b) (see a.o. Chomsky 1986; Safir 1987; Landau 2010). However, Safir (1987) observes that secondary predicates are licensed within the DP of derivationally deverbal English nominalisations, thereby suggesting the presence of a PRO argument within the nominal (see (108c,d)).

- (108) a. The dog ate *(the meat) *raw*.
 b. *Dinner was served *angry at the guests*.
 c. [PRO discussion of these issues *stoned*] rarely produces satisfactory results.
 d. [PRO inspection of the factory *drunk*] is rarely thorough.

Furthermore, Landau (2013) provides an argument for the presence of PRO in DP from phi-feature agreement in Hebrew nominalisations. Consider the example in (109). Interpretatively, we find that the overt subject of the first sentence is co-referent with the implicit agent of the nominalised subject in sentence two. We note also that the conjoined nominal predicates *as partners* and *as adversaries* show plural, feminine agreement. Landau argues that, since the two items occur across a sentence boundary, and are split by the phi-feature-bearing DP *Yosi*, this is not a case of direct agreement. Nor can it be explained by appealing to default agreement, which is masculine in Hebrew. Therefore, a syntactic PRO subject within the nominal constitutes the only plausible trigger for agreement (on the assumption that PRO is controlled via NOC by the matrix subject *the women*).

- (109) ha-našim_i ta'anu še-Yosi to'e. [PRO_i ha-avoda ke-šutafot
 the women claimed that-Yosi wrong. the-work as-partners.PL.FEM
 ve-lo ke-yerivot] rak kidma et ha-projekt.
 and-not as-adversaries.PL.FEM only advanced ACC the project
 ‘The women claimed that Yosi was wrong. Working as partners rather than as
 adversaries only advanced the project.’

Finally, Landau (2013) also contends that nominalisations – like controlled clauses –

provide a method for salvaging weak crossover (WCO) violations. Higginbotham (1980) observed that pronouns contained in subject clauses exhibit weak crossover, but only if the subject of said clause is a lexical DP (as in examples (110a,b)). If the subject is instead a PRO, WCO is seemingly repaired (see (110c,d)). Higginbotham classified this phenomenon as ‘PRO-gate’, in that the covert PRO subject provides a gateway through which the matrix QP can bind the pronoun within the subject clause.

- (110) a. ??[Mary’s seeing his_i father] pleased every boy_i.
 b. ??[Their_i getting letters from their_i sweethearts] is important for [many of the soldiers.]_i
 c. [PRO_i seeing his_i father] pleased every boy_i.
 d. [PRO_i getting letters from their_i sweethearts] is important for [many of the soldiers.]_i

The interaction between PRO and WCO is still not entirely understood, and likewise falls beyond the scope of this thesis.⁵ However, the crucial observation is that PRO and WCO are invariably linked, in that only PRO may obviate WCO violations. Landau (2013) contends that, just like gerundive subject clauses (as in (111a)), deverbal nominalisation subjects containing a bound pronoun do not give rise to WCO effects (see (111b)). This observation provides further support for the hypothesis that the English DP may house a PRO.

- (111) a. [PRO_i knowing his_i limitations] would help every linguist_i.
 b. [PRO_i knowledge of his_i limitations] would help every linguist_i.

Thus, while there are some challenges to the hypothesis, there are strong empirical motivations for positing a PRO subject within (at least some) English DPs.

3.3.2. Problems for PRO-based models in NP control

All potential counterexamples to a PRO (or *pro*) subject within the English DP notwithstanding, a PRO-based account of OC faces a number of non-trivial conceptual problems when faced with the *control into NP* generalisation.

First, on a binding analysis of OC (cf. Manzini 1983), it is unclear why verbs such

⁵ For further discussion, see (Brody 1984; Safir 1984, 1996, 2004; Jaeggli and Safir 1989).

as *begin* or *manage* would retain an OC relation into an event-denoting DP while verbs such as *promise* or *demand* would not. Consider the simplified OC structure in (112), in which the matrix subject *John* binds the null anaphoric PRO of the embedded TP.

(112) John_i managed [TP PRO_{i/*j} to inspect the factory.]

Given that *manage* is one verb that does enforce OC into its nominal complements, it is conceivable that the same PRO-binding relation is at work here too, as in (113a). The question then is why other OC predicates such as *promise* do not enforce OC in those same environments (see (113b)).

(113) a. John_i managed [DP PRO_{i/*j} the inspection of the factory.]
b. John_i promised [DP PRO_{i/j} the inspection of the factory.]

We contend that the alternation in (113) is incomprehensible if we appeal to the notion of PRO alone. If PRO does appear in the prenominal position of DP, then we predict the binding relation in (113a) but cannot account for the lack of one in (113b) *prima facie*. Likewise, If DP does not constitute a licit environment for PRO in the sense of Williams (1985), then (113b) is expected but (113a) is mysterious.

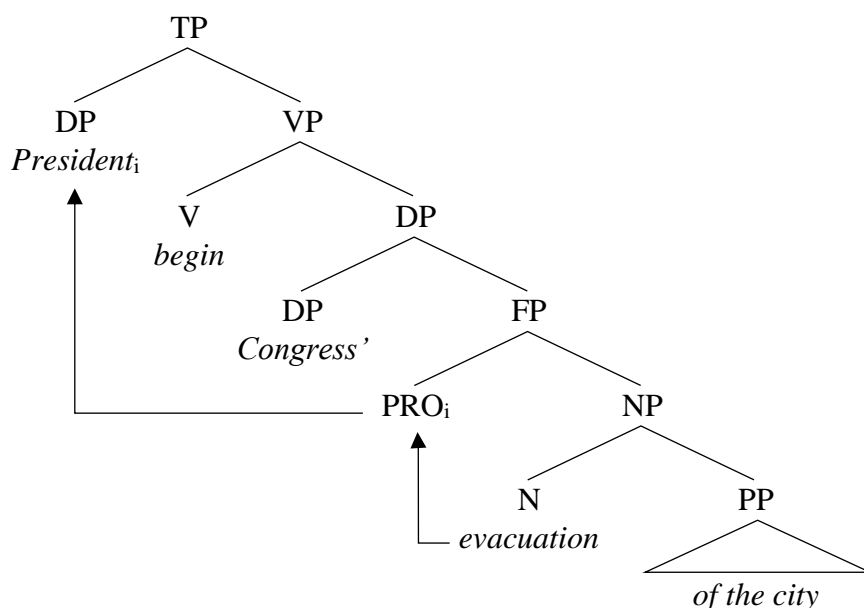
The situation becomes murkier once we consider the *overt nominal subjects* generalisation from chapter 2. That is, any PRO-based account of control in the domain of nominal complementation must contend with the fact that obligatorily controlled DPs may yet project a prenominal genitive argument. As we see in (114), when embedded under the EC verb *begin*, the prenominal genitive is interpreted as either an abstract possessor or beneficiary; crucially, an agent interpretation is unavailable.

(114) a. The president began [DP Congress' evacuation of the city.]
b. ⇒ The president began to carry out the evacuation of the city which was planned by Congress.

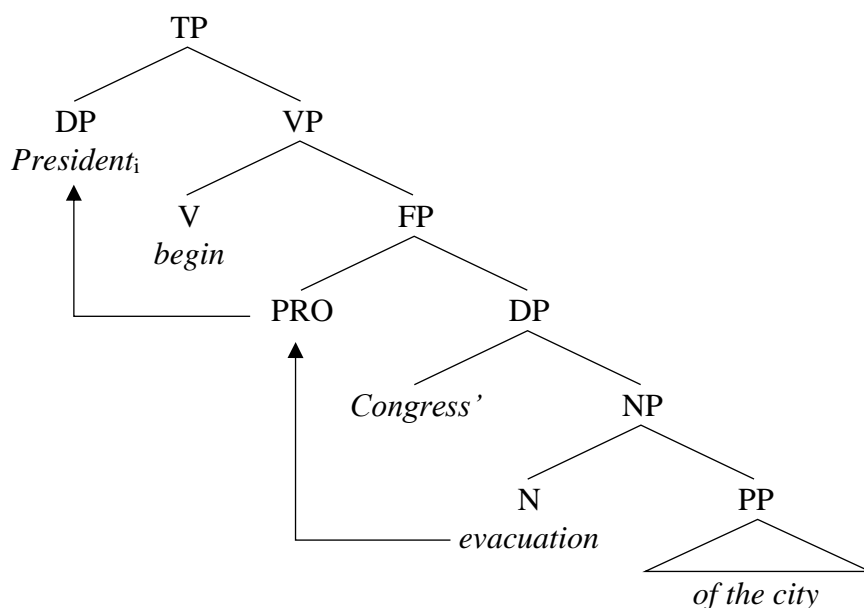
Recall that one reason to reject Williams' (1985) argumentation against a PRO in DP was due to Roeper's (1993) observation that prenominal modifiers do not rule out prenominal arguments (see (107)). The phenomenon in (114) reveals that, in order for PRO to be a critical ingredient to control in nominal complements, we require two separate prenominal argument positions within the event-denoting noun phrase. Further still, this would likely

require a non-local control or predication relation ‘through’ the overt prenominal possessor. To illustrate, consider the trees in (115,116) below. We assume for now that *inspection* is a noun head that takes a PP argument (the argumentation would be identical on a VP approach to nominalisation). We furthermore assume that the non-possessive PRO subject inhabits some functional projection FP, which is likely an NP specifier or some species of DP functional layer. As we see in (115), if PRO occurs below the prenominal genitive, then any binding relation between PRO and the matrix subject *the president* must occur across the overt DP specifier. If instead PRO occurs above the overt genitive, then we must account for an apparent predication relation across the overt DP possessor, as in (116).

(115)



(116)



Given the strict local environments that generally constrain both predication relations and anaphoric binding phenomena, the above hypotheses are untenable. While there do exist some control variants that may obviate the typical locality constraints (e.g., split control, cf. Landau 2003), EC predicates such as *begin* uniformly prohibit these types of non-local control.

The structures in (115,116) present another more fundamental question regarding the nature of subjects in nominalisations. Namely, what is the relationship between de-verbal nouns and apparent thematic subjects? Though some authors argue that prenominal genitives of de-verbal nominalisations constitute *bona fide* external arguments in the verbal sense (see e.g. Borer 2003), there is good reason to suspect that the relation between the nominal and prenominal genitive is not equivalent to the corresponding subject-verb relation. Marantz (1997) and Alexiadou (2001) argue that the prenominal genitive position is sensitive to the ‘possessive nexus’. That is, while the interpretation of the prenominal possessor is determined by a multitude of factors (including context and encyclopaedic/world knowledge), it is not mediated by any strict syntactic or semantic functional relation between the subject and the nominal itself.

Likewise, Kratzer (1996) observes that the interpretation of the prenominal genitive is not restricted to only those available to verbal external arguments. As illustrated in (98) above, possessive or benefactive readings are generally available to the genitive subjects of so-called OF-*ing* gerundive nominalisations. This observation is entirely in line with our discovery concerning overt genitive subjects in exhaustive control constructions. These interpretative possibilities make a PRO account of control into NP difficult to conceive; the binding of prenominal PRO should by hypothesis make available both agentive and benefactive interpretations. That is, if control into NP involves the binding of a PRO subject in the ‘possessive nexus’ of the nominal in question, we predict a semantic ambiguity such that PRO may be interpreted as an agent (117b) or as a benefactor (117c). This is, of course, not the case, as the interpretation in (117c) is impossible in this environment.

- (117) a. John_i managed [PRO_i the inspection of the factory].
b. John managed to carry out the inspection of the factory.
c. #John managed to have someone else carry out the inspection of the factory.

Given that the possible interpretations of the prenominal possessor in deverbal nominalisations do not correspond to the possible interpretations available to the controller,

a PRO-based analysis of control in this environment cannot be maintained without further stipulation.

3.4. Control as a semantic phenomenon

In a series of works, Jackendoff and Culicover (2003; Culicover and Jackendoff 2005, 2006) defend a model of control in which the control relation is determined not syntactically, but semantically at the level of Conceptual Structure. Their model assumes the non-existence of the null pronoun PRO.

Briefly summarising, Jackendoff and Culicover's (henceforth, J&C) account argues that the 'unique' (or 'obligatory') control relation is registered at Conceptual Structure by means of a semantic primitive predicate encoded in the control verb's lexical representation. A given control primitive, such as *INTEND* or *OBLIGE* will, by hypothesis, bind the implicit actor of the embedded predicate to an appropriate explicit controller argument, where 'appropriate' is determined by whether the primitive encodes subject- or object-control. Motivation for this approach comes from two empirical generalisations: (i) predicates that select actional complements require obligatory control, and (ii) the unique controller is determined by the thematic roles assigned by the predicate to its arguments, varying with the semantic class of the predicate (Culicover and Jackendoff 2005).

Actional events are taken to be a subset of 'situational' events, and differ from 'non-actions' in that the former are by default interpreted as voluntary when the subject is animate. The distinction of action vs. non-action is detectable by the *what x did was* diagnostic (see (118)). Likewise, the distinction of voluntary vs. involuntary can be seen with the use of the imperative, as well as modification by the adverbials *voluntarily* or *on purpose*, as demonstrated in example (119).

(118)a. *Actions*

What Roberta did was run the race/read a book/think about physics.

b. *Non-actions*

What Roberta did was ?grow taller/*strike Sammy as smart/*realise it was raining.

(Culicover and Jackendoff 2005)

(119) *Voluntary actions*

- a. Run the race!
Roberta ran the race voluntarily.
- b. Be quiet!
Roberta was quiet voluntarily.
- c. Be examined by a doctor!
Roberta was examined by a doctor voluntarily.

Non-actions

- d. *Grow taller!
*Roberta grew taller voluntarily.
- e. *Strike Sammy as smart!
*Roberta struck Sammy as smart voluntarily.
- f. *Realise it's raining!
*Roberta realised it was raining voluntarily.

(Culicover and Jackendoff 2005)

With the distinction between actions and non-actions in mind, J&C make the generalisation that those predicates which enforce obligatory control require an actional complement. This generalisation is demonstrated in (120), with the control predicates *promise* and *persuade* both allowing actional complements and excluding non-actional complements. A second source of evidence comes from the examples in (121), where predicates such as *tell*, *shout* and *call* alternate complement types. J&C note that when these predicates select *about*+gerundive complements – which constitute situational non-actions (Culicover and Jackendoff 2005) – they do not instantiate obligatory control (see (121a)). Contrast this with the example in (121b), in which the infinitival complement constitutes an actional complement, and instantiates obligatory control. Note that the use of PRO in (121) is for expository convenience only: J&C's account is necessarily PRO-less.

- (120) a. John promised (Bill) to run the race/*to grow taller.
b. John promised (Bill) to be quiet/*to strike Mary as smart.
c. John persuaded Bill to be examined by a doctor/*to realise it was raining.

- (121) a. Fred_i told/shouted to/called to Louise_j about PRO_{i/j/i+j/ARB} running the race/growing taller.

- b. Fred_i told/shouted to/called to Louise_j PRO_{j/*i/*i+j/*arb} to run the race/*to strike Sammy as smart.

(Culicover and Jackendoff 2005:432)

For J&C, the sensitivity of obligatory control to the semantic properties of the complement (action vs. non-action, voluntary vs. non-voluntary) suggests that OC relations are semantic rather than syntactic.

The second generalisation made by J&C concerns the manner in which the OC controller is determined. Specifically, they argue that the controller in OC constructions is determined by the thematic role it receives from its predicate, rather than its syntactic position. To demonstrate, the authors offer the following examples using the verbs *order* and *promise*. Examples (122a) and (123a) demonstrate that in neutral word order, *order* designates its Recipient as its unique OC controller, while *promise* designates as its controller an Agent. Examples (122b-e, 123b-e) show that this holds true across DP and sentence boundaries, regardless of the syntactic position of the controller.

- (122) a. John_i order Susan_j PRO_{j/*i} to take care of herself/*himself.
 b. The order to Susan_j from John_i PRO_{j/*i} to take care of herself/*himself.
 c. John_i gave Susan_j some kind of order PRO_{j/*i} to take care of herself/*himself.
 d. Susan_j got from John_i some kind of order PRO_{j/*i} to take care of herself/*himself.
 e. A: Susan got an order from John.
 B: What was it?
 A: I think it was to take care of herself/*himself.
- (123) a. John_i promised Susan_j PRO_{i/*j} to take care of himself/*herself.
 b. The promise to Susan_j from John_i PRO_{i/*j} to take care of himself/*herself.
 c. John_i gave Susan_j some kind of promise PRO_{i/*j} to take care of himself/*herself.
 d. Susan_j got from John_i some kind of promise PRO_{i/*j} to take care of himself/*herself.
 e. A: Susan got a promise from John.
 B: What was it?
 A: I think it was to take care of himself/*herself.

(adapted from (Culicover and Jackendoff 2005:434))

The authors note that the wide variation in the syntactic position of the unique OC controller

in examples (122,123) suggest that OC is not determined by syntactic position, but instead by thematic role. That is, in each iteration of *order* in example (122), *Susan* is always interpreted as Recipient and is likewise always the OC controller, despite the argument's distance from the predicate or its actional complement. J&C thus adopt the solution that it is this thematic role which carries the OC specification.

To this end, J&C propose a model of control in which a controlled actional VP with a single unsaturated argument – designated $x ACT$ – is selected by a primitive semantic control predicate at the level of Conceptual Structure. The semantic predicate binds the unsaturated argument of the embedded action to its thematic participant designated for OC, resulting in the persistent control relation we see in the examples above. The unique OC controller will differ from one semantic primitive to the next (Jackendoff and Culicover 2003; Culicover and Jackendoff 2005, 2006). One such semantic primitive is *INTEND*, which encompasses predicates such as *intend*, *decide* ('come to intend') and *persuade* ('cause to come to intend'). In each case, the thematic participant interpreted as bearing intention will be designated for OC. The basic notation for the OC relation enforced by the verb *intend* is given in example (124). X^a denotes the thematic argument of *intend* which bears intention toward the embedded action [$a ACT$], and which is bound to the single argument of the actional complement.

(124) X^a INTEND [$a ACT$]

As a consequence of the semantic binding between the intender and the sole argument of the actional complement, *any* predicate which contains this semantic primitive will realise this unique OC relation.

Given that our concerns are limited to the application of J&C's control framework in the domain of controlled nominals, we will disregard the more general counterexamples to their semantic model (but cf. Landau 2013:134-136) for empirical evidence against correlating OC with actional complements). Turning instead to controlled nominal complements, we must first note that J&C's analysis treats only controlled VPs and says nothing about the actional qualities of eventive NP complements. We therefore must first determine if NP complements fit the criteria for 'actions', rather than 'non-actions'. Since the *what X did was* diagnostic is VP specific, we will instead look at whether modification of prenominal adjectives such as *voluntary* or *deliberate* proves acceptable. As demonstrated in (125), those CENs derived from verbs denoting actions or non-action retain their voluntary and involuntary qualities, respectively.

(125) *Voluntary actions*

- a. Roberta's voluntary completion of the race.
- b. Roberta's voluntary silencing of the racket.
- c. The doctor's voluntary examination of Roberta.

Non-actions

- d. *Roberta's voluntary growth.
- e. *Roberta's voluntary striking of Sammy as smart.
- f. *The doctor's voluntary realisation that it was raining.

We may then assume that CENs that are derived from actional VPs are represented by actional primitives at the level of Conceptual Structure (e.g., *x ACT*).

Looking first at EC predicates, we see that J&C's model of semantic control correctly predicts the persistence of EC in eventive NP complement constructions. For J&C, EC predicates such as intransitive *dare* constitute the 'execution of an intention' (Culicover and Jackendoff 2005:462).⁶ We may extend this line of reasoning to other implicative verbs such as *manage*, as well as aspectual predicates like *begin*, which we know also take eventive NP complements. The examples in (126a-d) demonstrate that assuming an *INTEND* primitive in the meaning of *manage* and *begin* makes correct predictions: *John* controls the implicit argument of the actional complement regardless of syntactic position. The novel examples in (126a-g) show that this control relation persists in actional NP complements.

- (126) a. John_i {managed/began} PRO_{i/*j/*ARB} to express himself/*oneself.
b. John's_i {managing/beginning} PRO_{i/*j/*ARB} to express himself/*oneself (impressed Mary).
c. Mary_j was impressed by John_i for {managing/beginning} PRO_{i/*j/*ARB} to express himself/*herself.
d. John_i impressed Mary_j by {managing/beginning} PRO_{i/*j/*ARB} to express himself/*herself.
e. John_i {managed/began} PRO_{i/*j/*ARB} the expression of himself/*oneself.

⁶ J&C label the predicate *dare* as intransitive when it appears as a subject control verb with no embedded ECM subject, e.g. *John dared to read the note*. This categorisation presumably differs from 'transitive' *dare*, involving object control and the realisation of an ECM subject in the embedded clause, e.g. *John dared Mary to read the note*.

- f. Mary_j was impressed by John_i for {managing/beginning} PRO_{i/*j/*ARB} the expression of himself/*herself.
- g. John_i impressed Mary_j by {managing/beginning} PRO_{i/*j/*ARB} the expression of himself/*herself.

However, when we turn to PC predicates, the results are not as expected. Given that eventive NPs may denote actions (see (125)), and that the semantic binding relation responsible for OC is retained in NP complement environments with EC predicates such as *manage* and *begin*, J&C's approach incorrectly predicts the persistence of PC into actional NP complements. For example, the verb *plan* does not obligatorily control into eventive NP complements (127e-g), despite being a predicate of intention and thus, by hypothesis, containing the semantic primitive *INTEND* as part of its meaning.

- (127) a. John_i planned PRO_{i/*j/*ARB} to express himself/*oneself.
 b. John's_i plan PRO_{i/*j/*ARB} to express himself/*oneself (impressed Mary).
 c. Mary_j was impressed by John_i for planning PRO_{i/*j/*ARB} to express himself/*herself.
 d. John_i impressed Mary_j by planning PRO_{i/*j/*ARB} to express himself/*herself.
 e. John_i planned PRO_{i/j/ARB} the expression of himself/oneself.
 f. Mary_j was impressed by John_i for planning PRO_{i/j/ARB} the expression of himself/herself/oneself.
 g. John_i impressed Mary_j by planning PRO_{i/j/ARB} the expression of himself/herself/oneself.

Following work by Searle (1995), as well as Clark's (H. H. Clark 1996) concept of 'joint activity', J&C hypothesise that PC results when an individual holds an intention regarding a joint activity named in the complement (Culicover and Jackendoff 2005). The exact mechanism for the PC interpretation is left unspecified, though it is suggested to be a kind of coercion. It is unclear as to why PC should be unavailable in NP complement constructions: NP complements can be actional and can host a unique OC relation. In order to rescue J&C's control model, we must stipulate that the coercive element responsible for the 'intention toward a joint activity' conceptual representation is unavailable in NP complement constructions. Of course, such a stipulation would amount to an acknowledgement that (partial) control results not just from semantic factors at the level of Conceptual Structure, but from certain syntactic factors as well (e.g., the categorical status

of the actional complement).

In sum, J&C offer a model of control which derives the unique OC relation by purely semantic means. Their approach proposes that OC is tied to a predicate's semantic primitive, and is licensed by (one of) the predicate's thematic participants specified for OC. The binding of the OC relation to thematic roles predicts that control will obtain in a wide variety of syntactic configurations. Thus, J&C correctly predict the enforced EC relation that we see into eventive NP complements. However, their semantic model over-generates regarding PC predicates: J&C's model predicts the manifestation of OC between PC predicates and action-denoting NP complements, *contra* the *control into NP* generalisation. In order to recover from this shortcoming, J&C's control theory would require some stipulation allocating at least some of the work to the syntax (in the case of PC predicate constructions), thereby undermining the fundamental goals of a purely semantic account.

3.5. Dividing the labour between syntax and semantics

Having considered both purely syntactic approaches to control, as well as purely semantic approaches, we see that control into nominals is a matter of over- or under-generation for many theories. Movement-based approaches such as the MTC *prima facie* predict a lack of both EC and PC into nominal complements. PRO-based models of control will vary on whether they over- or under-generate, depending on one's assumptions regarding PRO in NP. In contrast, J&C's (2005, 2006) control model consistently over-generates in the environment of nominal complements, predicting the presence of PC (at least without further stipulation).

This section will examine Wurmbrand's (2002) re-evaluation of the OC/NOC divide, in which the former is enforced by the lexical semantics of the predicate, while the latter results from the distribution of PRO and its interpretation in various syntactic environments. Crucially, Wurmbrand cuts the data differently from the authors previously discussed. For her, those predicates which instantiate a fixed, predetermined controller-controllee relation in all possible instantiations constitute the class of OC predicates. Conversely, those predicates whose controller varies between instances belong to the category NOC. Thus, EC predicates are OC, while PC predicates are NOC in this framework. We may thus reword Wurmbrand's (2002) hypothesis as it applies to the EC/PC split as follows.

(128) *Wurmbrand's division of labour*

Exhaustive control is lexically encoded in the selecting predicate as a unique controller-controllee relation. Partial control is the interpretative result of the distribution of PRO and the syntactic environments in which it occurs.

In this section we will also consider the observations of Stiebels (2007), whose typological survey of cross-linguistic complement control will lay the foundation upon which our proposal is built.

3.5.1. Motivating a syntactic/semantic split

The main motivation for Wurmbrand's proposal comes from the variation she observes in the structure of the EC infinitival complement. Specifically, Wurmbrand (2002) demonstrates that EC infinitival complements may or may not contain a syntactic subject (PRO). Crucially, in either case, the EC relation is still present. This variation in the status of the infinitive can be observed in (i) restructuring effects and long A-movement, (ii) the binding properties of German infinitives, and (iii) the interpretation of *it*-anaphora.

Restructuring effects (Rizzi 1978, 1982; see also Aissen and Perlmutter 1983 on 'clause union') manifest as seemingly monoclausal phenomena in biclausal environments. Furthermore, those predicates which permit restructuring roughly correspond to the class of predicates which enforce exhaustive control (Wurmbrand 1998, 2001, 2002; Landau 2000; Barrie 2004; Cinque 2006; Grano 2012, 2015, a.o.). One example of the effects of restructuring is what is known as the *long passive* in German, illustrated in (129). In both the passive (129a) and the unaccusative (129b) examples, the embedded object raises to the subject position of the matrix clause to receive nominative case under agreement with the auxiliary.⁷ Crucially, passivisation of the matrix predicate causes the apparent loss of structural (accusative) case in the embedded clause.

- (129)a. Der Lastwagen und der Traktor wurden/*wurde zu reparieren versucht.
[the truck and the tractor]-NOM were/*was to repair tried
'They tried to repair the truck and the tractor.'

⁷ As Wurmbrand points out, *manage* is an unaccusative predicate in German, in that it requires the auxiliary *be* in the perfective.

- b. Der Brief und der Bericht sind/*ist mir auf Anhieb
 [the letter and the report]-NOMare/*is me-DAT straightaway
 zu entziffern gelungen.
 to decipher managed
 ‘I managed straightaway to decipher the letter and the report.’

(Wurmbrand 2002: 9)

Long-passivisation of the sort in (129) is limited to a small set of restructuring predicates. As demonstrated in (130), it fails with infinitival constructions involving predicates such as *plan*.

- (130) a. *dass der Traktor zu reparieren geplant wurde.
 that the tractor-NOM to repair planned was
 ‘that they planned to repair the tractor.’
 b. *dass die Traktoren zu reparieren geplant wurden.
 that the tractors-NOM to repair planned was
 ‘that they planned to repair the tractors.’

Wurmbrand (2002) proposes that many of the questions raised by examples (129) and (130) can be answered by assuming that the restructuring infinitival complement is smaller than a clause. (This follows the VP-approach to restructuring infinitives; see Wurmbrand 1998). First, structural case is unavailable for the embedded object in (129a,b), suggesting the lack of any case checking position in the extended verbal projection of the infinitival clause. Next, the questions of why the embedded (null) subject does not block long A-movement in (129) and why the same long A-movement is impossible in (130) are answered by assuming that the latter infinitives contain an embedded PRO subject, while the former do not. Thus, Wurmbrand pursues an approach in which a restructuring infinitival complement projects up to VP (as in (131a)). Conversely, non-restructuring infinitives may be bigger (*vP*, *TP*, *CP*, etc.). The ungrammaticality of (130a,b) therefore results from the infelicitous A-movement of the embedded object across the null embedded subject, as well as the nominative case assignment of the already structurally case-marked embedded object (as shown in (131b)).

- (131) a. [_{TP} der Traktor_i-NOM [_{VP} [_{VP} t_i [_V zu reparieren]] versucht] wurde]

- b. *[_{TP} der Traktor_i-NOM [_{VP} [_{TP/vP} PRO [_{VP} t_i-ACC [_V zu reparieren]] geplant]
wurde]

Wurmbrand concludes, based on the above observations and the requirement that restructuring predicates instantiate obligatory exhaustive control, that restructuring effects entail EC. However, this correlation is crucially one-way; EC does not entail restructuring. For example, recall that, in (129), long-passivisation of a restructuring predicate causes the loss of structural case in the embedded clause. Given this observation, we might predict that structural case is *never* available within the embedded clause of a restructuring predicate. However, Wurmbrand demonstrates that accusative case is indeed available to the object of an infinitival complement to a restructuring predicate, in both passive (132a) and unaccusative (132b) contexts. Note that in both examples, agreement between matrix T and the embedded object is no longer enforced.

- (132)a. dass versucht wurde/*wurden den Traktor und den Lastwagen zu reparieren
that tried was/*were [the tractor and the truck]-ACC to repair
'that they tried to repair the tractor and the truck.'
- b. dass es ihm gelungen ist/*sind den Traktor und den Lastwagen
that it him managed is/*are [the tractor and the truck]-ACC
zu reparieren
to repair
'that he managed to repair the tractor and the truck.'

(Wurmbrand 2002:12)

Based on this observation, Wurmbrand makes the claim that restructuring predicates are systematically ambiguous: either (i) verbs such as *try* and *manage* are restructuring predicates, and combine with a bare VP, or (ii) verbs such as *try* and *manage* are non-restructuring, and combine with a vP (or bigger) complement (Wurmbrand 2002).

To further support this claim, Wurmbrand turns to scrambling effects: in German, only restructuring infinitives permit the (non-focus) scrambling of an argument from the infinitive. In example (133a), *den Traktor* is scrambled from the extraposed restructuring infinitive. On the other hand, a non-restructuring predicate such as *bedauert* in (133b) does not permit the same scrambling operation, as illustrated in (133c).

- (133)a. dass Hans den Traktor versucht hat zu reparieren
 that John the tractor-ACC tried has to repair
 ‘that John (has) tried to repair the tractor.’
- b. dass Hans bedauert hat den Traktor reparieren zu müssen
 that John regretted has the tractor-ACC repair to must
 ‘that John (has) regretted having to repair the tractor.’
- c. *dass Hans den Traktor bedauert hat reparieren zu müssen
 that John the tractor-ACC regretted has repair to must
 ‘that John (has) regretted having to repair the tractor.’

(Wurmbrand 2002:12)

Turning back to the examples in (132), we see in (134) that attempting to scramble the embedded ACC-marked argument out of these infinitives results in ungrammaticality. This derivational crash is accounted for straightforwardly if we assume, as Wurmbrand does, that predicates such as *try* are ambiguous concerning the syntactic status of their selected infinitive.

- (134)a. *dass den Traktor versucht wurde zu reparieren
 that the tractor-ACC tried was to repair
 ‘that they tried to repair the tractor.’
- b. *dass (es) ihm den Traktor gelungen ist zu reparieren
 that (it) him the tractor-ACC managed is to repair
 ‘that he managed to repair the tractor.’

(Wurmbrand 2002:12)

Thus, a one-way correlation between exhaustive control and restructuring is motivated. Specifically, scrambling effects in German demonstrate that the infinitival complement to EC predicates such as *try* is not always transparent, and may instead behave like a non-restructuring infinitive.

Moving on to German binding effects, Wurmbrand notes that a [+PRO] account of restructuring infinitives makes different predictions than a [-PRO] account concerning the binding of reflexive anaphora in German. Specifically, the [+PRO] account assumes that

an embedded anaphor is bound locally by the embedded null subject PRO, which stands in a control relation with the matrix subject (as in (135b)). On the other hand, the [-PRO] account assumes that the embedded anaphor is bound directly by the matrix subject (as in (135c)).

- (135)a. weil der Hans sich zu rasieren versuchte.
 since the John SELF to shave tried
 ‘since John tried to shave himself.’
- b. since John [PRO_i SELF_i to shave] tried [+PRO]
- c. since John_i [SELF_i to shave] tried [-PRO]

As a preliminary, we see in (136b) that reflexive anaphora cannot be bound by the implicit argument of a passive. Contrasting this observation with the licit embedded reflexive anaphora in the impersonal passive constructions in (137) serves to illustrate that an embedded null subject (e.g., PRO) can indeed bind a reflexive in German non-restructuring infinitives. Note that the acceptability of (137c) confirms that, in non-restructuring contexts, even EC predicates may select an infinitive with an embedded null subject.

- (136)a. Frederick_i hat sich_i ein Haus gekauft.
 Frederic has SELF a house bought
 ‘Frederic bought himself a house.’
- b. *Ein Haus wurde (*sich) gekauft.
 a house was (*SELF) bought
 ‘A house was bought (*oneself).’
- (137)a. Es wurde beschlossen [PRO_i sich_i den Fisch mit Streifen vorzustellen]
 it was decided PRO SELF the fish with stripes-ACCto-imagine
 ‘They decided to imagine what the fish would look like with stripes.’
- b. Es war notwendig [PRO_i sich_i einen Wagen zu kaufen]
 it was necessary PRO SELF a car-ACC to buy
 ‘It was necessary to buy oneself a car.’
- c. Es wurde versucht [PRO_i sich_i den Fisch mit Streifen vorzustellen]
 it was tried PRO SELF the fish with stripes-ACCto-imagine
 ‘People tried to imagine what the fish would look like with stripes.’

(Wurmbrand 2002:15)

Given the contrast between (136b) and (137), and assuming the lack of an embedded PRO subject in restructuring infinitives (see (131a)), we are now in a position to understand the infelicity of the examples in (138). The inherently reflexive predicate *sich vorstellen* in (138a) completely resists restructuring. In the same vein, the addition of a benefactive anaphor in (138b) causes the otherwise licit derivation to crash.

(138)a. *weil (sich) der Fisch (sich) vorzustellen versucht wurde.
 since (SELF) the fish-NOM (SELF) to-imagine tried was
 ‘since somebody tried to recall the image of the fish.’

b. weil (*sich) der Turm (*sich) zu bauen versucht wurde.
 since (*SELF) the tower-NOM(*SELF) to build tried was
 ‘since somebody tried to build (*himself) the tower.’

(Wurmbrand 2002:15)

Given the acceptability of (137c) above, the facts in (138) should be attributed to the lack of any binder for the anaphora within the embedded restructuring complement, thus providing further evidence for Wurmbrand’s claim that restructuring infinitives lack a PRO subject.

Finally, following Chierchia (1984), Wurmbrand demonstrates the semantic nature of EC through *it*-anaphora and the *strict* or *sloppy* identity readings they yield. The reader should note that a *strict* reading refers to the subject of the elided clause being interpreted as the subject of the antecedent clause (see (139b)). A *sloppy* reading results when the subject of the elided clause is interpreted instead as the subject of the matrix predicate that selects it (see (139a)).

(139) Ezio likes fooling around, but his wife Mimi doesn’t like **it** at all.
 a. it: Mimi fooling around *sloppy reading*
 b. it: Ezio fooling around *strict reading*

Chierchia observes that the above ambiguity disappears when the *it*-anaphor appears under a predicate such as *begin* (an EC predicate). In this case, only the sloppy reading is available.

- (140) Ezio began playing violin for fun, and Nando began **it** out of lust.
- a. it: Nando playing *sloppy reading*
- b. *it: Ezio playing *strict reading*

Wurmbrand (2002) observes that the same asymmetry can be observed in German. Furthermore, she notes that the status of the antecedent clause is irrelevant in deriving the *strict* or *sloppy* reading. The table below (adapted from Wurmbrand 2002:21) shows that whether or not an *it*-anaphor permits a *strict* reading or not is determined solely by the control-type of the selecting predicate.⁸

(141)	<i>Antecedent</i>	<i>'it'</i>	<i>strict</i>	<i>sloppy</i>	<i>Example</i>
	Non-Exhaustive Control	Non-Exhaustive Control	+	+	(142a)
	Exhaustive Control	Non-Exhaustive Control	+	+	(142b)
	Non-Exhaustive Control	Exhaustive Control	-	+	(142c)
	Exhaustive Control	Exhaustive Control	-	+	(142d)

The examples in (142) demonstrate the generalisations given in table (141). In (142a) and (142b), both *strict* and *sloppy* readings are available for the *it*-anaphor under the non-EC predicate *announce*, despite the variation in the control properties of the antecedent clause. On the other hand, (142c) and (142d) permit only a *sloppy* reading of the *it*-anaphor under the EC predicates *dare* and *try*, again despite variation in the antecedent.

- (142)a. Hans beschloß zu heiraten [nachdem Peter es angekündigt hatte.]
 John decided to get-married [after Peter *it* announced had.]
 ‘John decided to get married after Peter had announced that he, Peter, would get married.’
 ‘John decided to get married after Peter had announced that John would get married.’
- b. Hans wagte zu heiraten [nachdem Peter es angekündigt hatte.]
 John dared to get-married [after Peter *it* announced had.]
 ‘John dared to get married after Peter had announced that he, Peter, would get married.’
 ‘John dared to get married after Peter had announced that John would get married.’

⁸ To avoid terminological confusion, Wurmbrand’s table has been adapted to distinguish between those predicates which enforce exhaustive control, and those that do not.

- c. Hans beschloß zu heiraten [nachdem Peter es gewagt hatte.]
 John decided to get-married [after Peter *it* dared had.]
 ‘John decided to get married after Peter had dared to get married.’
 *‘John decided to get married after Peter had dared that John would get married.’
- d. Hans wagte zu heiraten [nachdem Peter es versucht hatte.]
 John dared to get-married [after Peter *it* tried had.]
 ‘John dared to get married after Peter had tried to get married.’
 *‘John dared to get married after Peter had tried that John would get married.’
- (Wurmbrand 2002:21)

Having demonstrated that the distinction between non-EC (e.g., PC) and EC correlates with the possibility or impossibility of a *strict* identity reading, respectively, Wurmbrand shows that an *it*-anaphor selected by an EC predicate need not represent a subject-less VP. Recall that the inherently reflexive German predicate *sich vorstellen* cannot occur within an exhaustively controlled restructuring infinitive (see (138a)). In (143a), Wurmbrand (2002) following Grewendorf (1984, 1988) shows that the German dative cannot bind an anaphor. Assuming both of these conditions apply in (143b), we now have indirect evidence of a null subject within the elided clause. If the infinitive did not contain a PRO subject to bind the anaphor *sich*, we would predict ungrammaticality, since the dative *der Maria* cannot bind anaphora, and the reflexive predicate *sich vorstellen* cannot occur in subject-less VPs.

- (143)a. weil der Hans_h der Maria_m sich_{h/*m} auf dem Photo zeigte.
 since the John_h-NOM the Maria_m-DAT SELF_{h/*m} in the picture showed.
 ‘since John showed Mary himself/*herself in the picture.’
- b. Peter hat beschlossen [sich den Fisch mit Streifen vorzustellen]
 Peter has decided [SELF the fish with stripes-ACC to-imagine
 nachdem es Der Maria gelungen ist.
 after *it* the Maria-DAT managed is
 ‘Peter decided to imagine what the fish would look like with stripes after Mary managed to imagine what the fish would look like with stripes.’
- (Wurmbrand 2002:23)

In sum, Wurmbrand (2002) presents evidence that the syntactic status of the EC complement clause is variable in nature. Specifically, we have seen that restructuring

complements, which require EC, are best analysed as subject-less VPs. Further evidence for the subject-less VP analysis of German restructuring clauses comes from the binding patterns in long-passives. Finally, Wurmbrand demonstrates that whether or not an *it*-anaphor allows a *strict* reading is keyed directly to the control type of the selecting predicate. Specifically, EC predicates only allow a *sloppy* reading, while PC predicates permit both *strict* and *sloppy* readings. Crucially, in those cases involving EC predicates, the *it*-anaphor may be bigger than a subject-less VP.

3.5.2. The syntactic/semantic division and control into NP

We saw in sections 3.2 and 3.3 that purely syntactic accounts to control under-generate in the domain of NP control: the obligatory presence of EC into NP complements is unexpected given the lack of clausal structure. Similarly, in section 3.4 we saw that a purely semantic approach to control over-generates in this same environment: there is no principled reason that EC but not PC predicates should enforce OC in nominal complements if both EC and PC involve some form of thematic/semantic binding. In this section, we will assess to what extent Wurmbrand's (2002) hybrid approach to EC/PC can account for the *control into NP* generalisation, repeated below as (90).

(144) *Control into NP*

Exhaustive control predicates enforce exhaustive control into de-verbal, eventive NP complements; partial control predicates show no obligatory control into NP complements.

Having reviewed the empirical basis for Wurmbrand's model of control, we are now in a position to determine what predictions a mixed model makes (if any) concerning control into non-canonical complements, such as NPs. Recall that the variable nature of the syntactic structure of EC complements supports a semantic approach to EC. In contrast, the lack of syntactic variability in PC complements (e.g., no restructuring) lends itself to a syntactic approach to PC. With these points in mind, Wurmbrand's model makes the following predictions regarding the uniform control of complements.

(145) *Wurmbrand's predictions for uniform complement control*

Exhaustive control – a phenomenon derived by the lexical semantics of the selecting predicate – will obtain into any complement, so long as that complement is eventive in the relevant sense⁹; Partial control – a phenomenon resulting from PRO occurring in specific syntactic environments – will not obtain into any complement lacking the necessary syntactic structure.

Before we assess the veracity of the predictions in (145) within the domain of NP control, a few clarifying remarks are necessary concerning the ‘eventivity’ of noun phrases and the syntactic structure of the English DP.

As previously mentioned in chapter 2, Grimshaw’s (1990) original classification divides nominals into those which *can* support argument-structure (complex event nominals) and those which *cannot* (simple event and result nominals). Since this distinction, the literature has produced two primary methods for accounting for this distinction: (i) the ‘event-based’ approach (Grimshaw 1990; Alexiadou and Grimshaw 2008), in which eventivity is lexically encoded in an argument-structure-preserving nominal affix, and (ii) the ‘VP-analysis’ (Borer 1993, 2003, 2012; Fu 1994; Hazout 1995; Alexiadou 2001), in which the eventivity and argument-projecting capability of a derived nominal is the direct result of verbal material present beneath the nominalising affix.

The event-based approach follows Higginbotham (1985) and Di Sciullo and Williams (1987) in assuming that all nouns possess an open, non-thematic argument position *R*. By ‘non-thematic’, we mean that *R* is never the complement to a head, and there is no sense in which *R* is a theme or an agent. It is this *R* role which is bound by a referent (146a), and which denies the eventivity and argument-projecting properties of simple event and result nominals (146b).

- (146) a. *Dog*(*R*)
b. *Run*(*R*)

To account for the argument-projecting properties of complex event nominals, Grimshaw (1990) posits an alternative external argument *Ev*, lexically encoded in nominalising affixes such as *-ing* or *-ation*. This *Ev* argument designates the event itself, and preserves the argument structure of the underlying verb. The event-based derivation of a complex event nominal is illustrated in (147). The lexical entry of the base verb *observe* in (147a) includes

⁹ The precise nature of EC complements will be discussed at length in chapters 5 and 6.

the lexical category V, as well as the transitive argument structure of the predicate. In (147b), we see that the affix *-ing* carries the lexical category N, as well as the argument-preserving *Ev* role. Finally, in (147c) the merging of the verb with the nominalising head projects N, and the external argument *Ev* preserves the argument structure specified in the lexical entry of the underlying verb *observe*.

- (147) a. *Observe* [V] (x (y))
 b. *-ing* [N] (*Ev*)
 c. *Observing* [N] (*Ev* (x (y)))

In sum, the eventivity of CENs under the event-based approach is directly keyed to the presence of a specific *Ev* argument on the nominalising affix. The non-eventive nature of SENs/RNs is due simply to the fact that, despite any underlying verbal base, they take a referential *R* role and thus typically behave like purely referential nouns.

The ‘VP-analysis’ to CENs differs from the above approach, in that the argument-projecting properties of the nominal are argued to be a direct reflection of verbal functional structure within the nominal itself. It is important to note that, for these approaches, event structure is often decomposed in the syntax, so that syntactic structure corresponding to the verbal projection *is* event structure. Thus, the eventivity of CENs is likewise derived from the presence of verbal material. Alexiadou (2001) extends this approach, arguing for the presence of an AspP beneath the nominalising affix of CENs. Likewise, Borer (2003) posits the presence of an entire ‘event complex’ beneath the nominaliser, so that both the internal and external arguments of a de-verbal (or de-adjectival) nominalisation are proper arguments of a lexically projected VP.

The strongest evidence supporting the presence of at least a VP within a CEN comes from (i) the possibility of VP-modifying adverbs within these nominals, and (ii) the ability of CENs to serve as antecedents to *do so* anaphora. The reader should note that the following data are contentious at best (cf. Ackema and Neeleman 2004), and do not lend themselves entirely to cross-linguistic trends. Firstly, though the adverbs in (148) might seem strange to a native English speaker, there is a clear contrast between their acceptability and the acceptability of VP-modifying adverbials in SEN/RN constructions (see (149)) (Fu, Roeper, and Borer 2001).

- (148) a. While the removal of evidence *purposefully* is a crime, the removal of evidence *unintentionally* is not.
- b. ?His explanation of the problem *thoroughly* to the tenants did not prevent a riot.
- c. His transformation into a werewolf *so rapidly* was unnerving.

- (149) a. *His version of the accident *thoroughly* to the tenants did not prevent a riot.
- b. *His metamorphosis into a werewolf *so rapidly* was unnerving.

Further, we see in (150) that, while VP-modifying adverbials are licit in these constructions, sentential adverbial modification is impossible. This observation serves to suggest that, though the presence of a VP may be warranted within a CEN, the present of clausal structure (i.e., CP, IP, etc.) is not.

- (150) a. She explained the problem *thoroughly* to the tenants.
- b. Her explanation of the problem *thoroughly* to the tenants ...
- c. *She explained the problem *presumably* to the tenants.
- d. *Her explanation of the problem *presumably* to the tenants ...

Secondly, CENs may serve as the antecedent to *do so* anaphora, while SENs and RNs may not, as illustrated in (152). As a preliminary, the examples in (151) serve to demonstrate that *do so* must replace the entire VP, and not just the individual V^o (Fu, Roeper, & Borer 2001).

- (151) a. He removed the garbage yesterday, and I did so too.
- b. He removed the garbage yesterday, and I did so today.
- c. *He removed the garbage yesterday, and I did so the recycling.

- (152) a. Sam's destruction of his documents this morning was preceded by Bill's doing so last night.
- b. *Sam's version of the event and Bill's doing so were so surprising.

Further, Ru, Roeper & Borer (2001) again demonstrate that CENs likely lack clausal structure. Following Déchaine (1994), the authors assume that bare *do* is dominated by a Tense projection. Thus, if CENs do indeed contain IP, we predict that they may act as antecedent to bare *do*. The contrast between (153a) and (153b) demonstrates that this is not the case.

- (153) a. The Airforce's destruction of the city with bombs and the Navy's doing so too made the headlines.
- b. *The Airforce's destruction of the city with bombs and the Navy's doing too made the headlines.

In sum, the (marginal) availability of VP-modifying adverbials and the ability of CENs to act as antecedents to *do so* provide evidence of potential verbal material beneath the nominalising element. For a proponent of the VP-analysis, the presence of a VP (or more) provides a natural explanation to the projection of arguments within the NP. Likewise, the mandatory eventivity of CENs is explained if one assumes that verbal structure corresponds to event structure. We make no endorsements of either method in this section, though both will be rejected in chapter 4. Instead, we note that, while the event-based approach and the VP-analysis utilise different machinery, they both converge on the same conclusion: SENs and RNs lack the mechanism responsible for the eventivity of CENs, and thus are structurally equivalent to canonical referential nouns.

Based on this brief overview of nominalisation, we may further refine the predictions that Wurmbrand's theory of control would make in the nominal domain, assuming the principles of nominal derivation we have just reviewed.

(154) *Wurmbrand's predictions for NP complement control (version 1)*

Exhaustive control – a phenomenon derived by the lexical semantics of the selecting predicate – will obtain into CENs, but not SENs nor RNs; Partial control – a phenomenon resulting from specific syntactic relations – will not obtain into an NP complement.

Breaking down the predictions in (154), we note first that the event-based approach makes no explicit mention of the syntactic structure of nominals, and in the VP-analysis we see evidence to suggest the lack of clausal structure in nominalisations. For these reasons, and assuming that PC is tied to the clausal structure of the clausal left-periphery, we predict the lack of PC into NP complements of any variety. Likewise, while both approaches derive eventivity in CENs in different fashions, they agree on the *lack* of both event- and argument-structure in SENs and RNs. Assuming that by 'eventivity' we mean (minimally) the presence of implicit thematic information from which arguments may be projected, we predict that EC will obtain into only CENs, and that EC will not manifest in either SENs

or RNs.

Immediately, we notice a problem with these predictions. Namely, we saw in chapter 2 that the effects of exhaustive control apply equally to both CENs and SENs. While the precise nature of SENs will be fully investigated in chapter 4, we assert that a semantic control relation requires minimally an event variable (in the Neo-Davidsonian sense) in order to recover implicit thematic participants. We therefore hypothesise – *contra* both the event-based approach and the VP-analysis – that a nominalisation may be eventive in the relevant sense without the capacity to support argument structure, (see (155)). On this hypothesis, the predictions from Wurmbrand’s control theory in the nominal domain become quite different, as illustrated in (156).

(155) *Hypothesis of general eventivity in derived nominalisations*

The capacity for a derivational nominalisation to denote a structured event is independent of the realisation of any arguments within the nominalisation.

(156) *Wurmbrand’s predictions for NP complement control (version 2)*

Exhaustive control – a phenomenon derived by the lexical semantics of the selecting predicate – will obtain into any *eventive* nominal complement (CENs and SENs, but not RNs); Partial control – a phenomenon resulting from specific syntactic relations – will not obtain into an NP complement.

The predictions made by Wurmbrand’s model concerning the control properties of partial control predicates remain unchanged. However, if SENs are assumed to be structurally event-denoting in an equivalent manner to CENs, Wurmbrand’s model then correctly predicts the *control into NP* generalisation from chapter 2. In sum, a model of control in which EC is derived semantically and PC is derived syntactically provides the best account of control into nominals. However, it requires the concession that SENs and CENs, while different in their argument-projecting properties, are identical in their eventive properties.

Of course, it may be more attractive to invoke some kind of coercion operation in order to account for the eventivity and subsequent control phenomena we have observed in SEN environments, thereby preserving the ‘uniqueness’ of CENs. However, we have already seen in chapter 2 that the control phenomena observed in SEN environments mirrors those observed in CEN environments, and is quite different to the coercive readings found with non-eventive RN complements. Furthermore, utilising Wurmbrand’s (2002) *it*-anaphora diagnostic (see (141,142) above), we see that the possible identity readings of

CEN-denoting *it*-anaphora are identical to those of SEN-denoting *it*-anaphora. Recall that, according to the table in (141), *it*-anaphora selected by EC predicates will only ever permit *sloppy* readings, regardless of the control-type of the antecedent. Thus, we predict that nominal-denoting *it*-anaphora will only permit *sloppy* identity readings when selected by an EC predicate, so long as that nominal is eventive (either a CEN or SEN). This prediction is borne out in (157,158).

- | | | |
|----------|---|-----------------------------|
| (157) a. | John regretted the inspection of the factory after Bill demanded it. | <i>no identity</i> |
| b. | John managed the inspection of the factory after Bill demanded it. | <i>strict identity only</i> |
| c. | John regretted the inspection of the factory after Bill began it. | <i>sloppy identity only</i> |
| d. | John managed the inspection of the factory after Bill began it. | <i>sloppy identity only</i> |
| | | |
| (158) a. | John regretted the recent journey to Nebraska after Bill demanded it. | <i>no identity</i> |
| b. | John managed the recent journey to Nebraska after Bill demanded it. | <i>strict identity only</i> |
| c. | John regretted the recent journey to Nebraska after Bill began it. | <i>sloppy identity only</i> |
| d. | John managed the recent journey to Nebraska after Bill began it. | <i>sloppy identity only</i> |

In examples (157a,158a), in which both verbs are PC predicates, there are no salient identity readings. This result is expected, given the fact that the phenomena of *strict* and *sloppy* identity are inherently keyed to the presence of a control relation. Examples (157b,158b), with an EC predicate in the antecedent and a PC predicate selecting the *it*-anaphor, lend themselves only to a *strict* identity reading. Again, this result is unsurprising: the only available control relation is between *John* and the implicit subject of the antecedent. The crucial examples in (157c,d,158c,d) demonstrate that, as predicted, an exhaustively controlled nominal-denoting *it*-anaphor will permit only a *sloppy* identity reading. This generalisation obtains regardless of the control-type of the antecedent, and despite the availability of *strict* readings in (157b) and (158b). Critically, the *it*-anaphora

in (157) – denoting CENs – and the *it*-anaphora in (158) – denoting SENs – behave identically in these environments. These observations support the hypothesis that whatever enforces EC does not distinguish between CENs and SENs. The equivalence of CENs and SENs will be the focus of chapter 4, which will provide evidence to support this hypothesis independent of control phenomena in the nominal domain.

The systematic nature of the identity readings in (157) and (158), as well as the systematically shared control properties discussed in chapter 2, suggest that analysing control into CENs as proper control and control into SENs as a kind of coercion is the less attractive option. Instead, these shared properties merit a shared analysis. We are presented with the following choices: either (i) control into CENs and control into SENs are both instances of the broader phenomenon of control, which we also see into clauses, or (ii) control into CENs and control into SENs are both cases of coercion, in which case they should be analysed as involving a quasi-control phenomenon that is distinct from control into clauses. Given that the qualities typical of EC into clauses are also observed in exhaustively controlled NPs, option (i) must constitute the null hypothesis and will therefore be considered the primary position to be elaborated in later chapters.

3.5.3. Inherent vs. structural control

In her typological survey of cross-linguistic complement control, Stiebels (2007) distinguishes between two types of obligatory control: inherent control and structural control. Inherent control refers to an obligatory control relation that is enforced by the lexical semantics of the control predicate. On the other hand, structural control refers to any control relation that is induced by the control complement itself. Verbs of inherent control will enforce OC in any environment in which they may appear. Conversely, verbs that participate in structural control do not themselves enforce any control reading, and subsequently may also appear in many non-OC environments.

The parallels between Stiebels' work and that of Wurmbrand (2002) are numerous. For one, the variable nature of restructuring complements follows naturally from an 'inherent control' analysis of restructuring predicates (and indeed, this is precisely the tack taken by Wurmbrand). Further, the notion of 'structural control' is similar in spirit to Wurmbrand's 'PRO' analysis of non-EC control constructions. However, Stiebels' observations reveal that the nature of structural control and control-complements is cross-linguistically varied, and may not lend itself to a simple PRO analysis.

Beginning with the status of control-complements, Stiebels identifies two

categories of complements that cross-linguistically occur in control constructions: (i) control-inducing, and (ii) control-neutral. Control-inducing structures involve the obvious infinitival clauses that have been the predominant focus of control theory since its inception. However, cross-linguistically, a number of non-infinitival complement types also induce control in all instantiations. For example, Mandarin Chinese lacks the finite-infinite distinction, and control is marked by the lack of an overt pronoun. We find that the subordinate clause in (159a) induces a control reading; the matrix predicate *biaoshi* is equally compatible with non-control contexts, as we see in (159b).

- (159)a. Dahua_i biaoshi [PRO_{i/*j} wufa canjia zhe-ge-huodong]
 Dahua mean cannot participate this-CL-activity
 ‘Dahua meant not to be able to take part in this activity.’
- b. Dahua_i biaoshi [ta_{i/j} wufa canjia zhe-ge-huodong]
 Dahua mean 3SG cannot participate this-CL-activity
 ‘Dahua meant that he cannot participate in this activity.’

(MANDARIN: Stiebels 2007:29)

Further, Stiebels observes that some overtly finite clauses may likewise be control-inducing, as evidenced by data from Q’eqchi’ (a Mayan language).¹⁰ In example (160a), we see that a finite complement clause without an overt complementiser induces obligatory control between the matrix and embedded subjects. Furthermore, the addition of an overt complementiser *naq* in (160b) triggers a non-control reading.

- (160)a. n-inw-aj [t-in-xik sa' li k'ayil]
 PRES-1SG.E-want FUT-1SG.N-go inside the market
 ‘I want to go to the market.’
- b. ta-cu-aj [naq t-at-xik]
 TMP-1.E-want COMP.DS FUT-2.N-go
 ‘I want you to go.’

(Q’EQCHI’: Stiebels 2007:36)

Of course, finite complements do not generally show control, as we see in English finite

¹⁰ Given the arguably modal nature of syntactic future (see Wurmbrand 2014), it is entirely possible that these Q’eqchi’ tokens involve an embedded clause that is smaller than a CP/TP, with a comparatively low spell-out of finiteness (see also Todorović and Wurmbrand 2015).

complement clauses. Likewise, Balkan languages show a variety of finite subjunctive clauses in both control and non-control environments. For example, the Albanian finite subjunctive clause in example (161a) does not require a control reading. However, that same complement clause does tolerate OC, as we see in example (161b). By Stiebels' own definition, Albanian subjunctives are 'control-neutral' in this sense.

- (161)a. Njeriu_i deshi [ta PRO_{i/j} vjedhë pulën]
 man wanted.3SG COMP steal.3SG.SUBJ chicken
 'the man wanted (him) to steal the chicken.'
- b. Gruaja_i e detyroi njeriun_j [ta PRO_{j/*i} vjedhë pulën]
 woman PRO forced man.ACC COMP steal.3SG.SUBJ chicken
 'the woman forced the man to steal the chicken.'

(ALBANIAN: Noonan 1985:67)

Most relevant to our purposes is the cross-linguistic status of nominal complements. Stiebels finds that, barring a few exceptions, nominalised complements are cross-linguistically control-neutral. That is, while they will tolerate an OC relation, they will not induce one themselves. This is most readily demonstrated in Turkish, a language which exploits nominalisation and so-called 'mixed categories' to a far greater extent than English. As we see in (162a,b), non-control constructions are readily available with event-denoting nominal complements. Likewise, Turkish nominalisations tolerate OC from those predicates which enforce it, as illustrated in (162c,d). Note that in these cases, any nominal subject is marked with genitive case, while any other arguments appearing within the nominal are marked with verbal structural case.

- (162)a. (ben) [Ahmed-in öl-düğ-ün]-ü duy-du-m
 I Ahmed-GEN die-NOML-3SG.P-ACC hear-PAST-1SG
 'I heard that Ahmed died.'
- b. (ben) [Ahmed-in öl-me-sin]-den kork-uyor-du-m
 I Ahmed-GEN die-NOML-3SG.P-ABL fear-PROG-PAST-1SG
 'I was afraid that Ahmed would die.'
- c. lütfen [_ pencere-yi aç-mağ]-i unut-ma!
 please window-ACC open-NOML-ACC forget-NEG
 'Please don't forget to open the window.'

- d. (ben) Ahmed-i [_ kaç- mağ]-a zorla-di-m
 I Ahmed-ACC flee-NOML-DAT force-PAST-1SG
 ‘I forced Ahmed to flee.’

(TURKISH: Kornfilt 1997)

Separate from the classification of complement-types, Stiebels identifies a distinction between *inherent control* and *structural control*. As discussed above, inherent control is borne by the lexical information of a particular control predicate. Structural control, on the other hand, results from complementation by a control-inducing complement. Stiebels provides the table in (163) to summarise the possible cross-linguistic classes of control constructions. Note that the [\pm control] denotation illustrates whether a control reading is enforced despite the fact that the complement is control-neutral.

(163)

<i>Predicate Type</i>	<i>Complement Type</i>	
	Control-inducing	Control-neutral
Strong inherent control	✓	✗
Weak inherent control	✓	✓[+control]
Structural control	✓	✓[-control]
Marked inherent control	✗	✓[+control]
Non-control	✗	✓[-control]

(Stiebels 2007:39)

Thus, if we make the hypothesis that English EC predicates belong to the class of *weak inherent control* predicates, Stiebels’ typology predicts the *control into NP* generalisation. That is, EC predicates are compatible with both control-inducing complements (e.g., infinitival clauses) as well as control-neutral complements (e.g., nominalisations), but enforces a control reading in the latter regardless. Likewise, PC predicates such as *promise* or *demand* are best characterised by the class of *structural control* predicates. That is, they only show an obligatory control reading in control-inducing environments; control-neutral complementation will yield no control.

The notion that weak inherent control predicates enforce a control reading into control-neutral complements is not confined to English. For example, in (164a) we see that the German control predicate *auffordern* (‘ask/request’) is compatible with nominal complements (with the help of the preposition *zu* (‘to’), and subsequently enforces an object control relation in this environment. The non-control reading in (164b) is predictably

ungrammatical.

(164)a. Sie haben ihn_i zum PRO_{i/*j} Verzicht auf das Mandat
they have him to.the renunciation on the mandate
aufgefordert
asked
'they have asked him to renounce his mandate.'

b. *Sie haben ihn zu Marias Verzicht auf das Mandat
they have him to Mary's renunciation on the mandate
aufgefordert
asked
'they have asked him that Mary renounces her mandate.'

(Stiebels 2007:41)

The ubiquity of weak inherent control predicates contrasts sharply with those of *strong inherent control*: those predicates which only ever select control-inducing complements. Among these are Polish control predicates such as *prześcić* ('quit'), *spróbować* ('try') and *zdoląć* ('manage'), all of which are only compatible with control-inducing infinitival complements (Słodowicz 2006). Among this class of control predicates may also be many English object control verbs, such as *force* and *dare*. Unlike EC subject control predicates, the object control verbs in (165) reject nominal complementation.

- (165)a. John forced Bill to inspect the factory.
b. *John forced Bill (of/for/about/...) the inspection of the factory.
c. Mary dared Dr. Brown to examine the patient.
d. *Mary dared Dr. Brown (of/for/about/...) the examination of the patient.

Ultimately, an analysis of the strong inherent character of object control predicates in English is beyond the scope of this thesis. However, it is conceivable that a relatively simple semantic constraint may be responsible. For example, the lexical entry in (166a) may readily describe the object control predicate *force*, with (166b) representing an adequate (if overly simplified) denotation of the utterance in (165a). In this case, *force* selects an individual and a property of individuals and relates the two (assuming a property view of infinitives, see Pearson 2012). On the assumption that nominalisations do not denote

properties of individuals, the pattern in (165) is accounted for.

- (166) a. $\lambda P_{\langle e,vt \rangle} . \lambda y . \lambda x . \lambda e . force(e) \wedge Agent(e) = x \wedge Theme(e) = y \wedge P(y)$
 b. $\exists e [force(e) \wedge Agent(e) = J \wedge Theme(e) = B \wedge \llbracket inspect\ the\ factory \rrbracket(B)]$

Marked inherent control predicates constitute the final category of ‘inherent’ control predicates. These predicates are unique in enforcing a lexical control relation, but being incompatible with control-inducing complements. For example, although Hungarian does have an independently control-inducing infinitival clause, Stiebels shows that some inherent control predicates in Hungarian (i.e., *meg-kér* (‘ask’), *meg-győz* (‘convince’)) select only control-neutral subjunctives, as illustrated in (167). Note that in these case, obligatory control is still enforced into the finite complement clause.

- (167) János_i meg-győz-te Mariá-t_j [hogy PRO_{j/*i/*k} men-jen/
 J PV-convince- M COMP go-3SG.SUBJ/
 PAST.3SG
 *men-ni vel-e]
 go-INF with-3SG
 ‘János convinced Mary to go with him.’

(Stiebels 2007:42)

Although finite complementation and control are in complementary distribution in English, there may be some evidence of marked inherent control involving English nominal complements. Specifically, predicates such as *perform* and *carry out* seem to enforce a control-like reading, in which the performer is understood to be the agent of whatever is being performed. However, these predicates may only select nominal complements; *perform* and *carry out* are both incompatible with control-inducing infinitival complements.

In terms of *structural control* predicates, it is useful to note that the obligatory control relation in these constructions is driven primarily (if not entirely) by the nature of the complement. That is, the term ‘structural control predicate’ merely picks out those predicates which are compatible with control-inducing complements, and does *not* indicate any semantic or syntactic force on the part of the predicate itself that yields or contributes to a control reading. As Stiebels demonstrates, structural control constructions are more common cross-linguistically, and are subject to more cross-linguistic variation than either

variety of inherent control. For instance, while Polish factive predicates may not take control-inducing infinitival clauses (Słodowicz 2006), German factives readily license modalised infinitival complements.

In terms of English PC predicates, we know that verbs such as *promise* and *demand* are equally compatible with control-inducing infinitival clauses as they are with control-neutral finite clauses or nominal complements; in the latter cases, no control reading is enforced. This variety in the complementation facts makes a unified lexical entry notoriously difficult to pin down for these predicates: encoding a propositional argument bars composition with any referential (e.g., nominal) arguments, and vice versa. The alternative method of proposing a suite of lexical entries for each and every complement type (i.e., *promise_{infinitive}*, *promise_{gerund}*, *promise_{nominal}*, etc.) is equally unattractive, given the *temporal orientation in NP* generalisation of chapter 2. While the nature of structural control is ultimately beyond the scope of this thesis, it is conceivable that future research might pursue the hypothesis that PC verbs are in fact intransitive predicates that are compositionally compatible with a wide range of complements, including control-inducing infinitives. Such an analysis may provide some purchase on the complementation facts of (attitudinal) PC predicates, while retaining a unified account of their temporal properties across complement domains.

3.6. Conclusion

Given the empirical generalisations asserted in chapter 2, we began this chapter with the intention of isolating the most natural account for the control properties observed in the environment of nominal complementation. We saw in sections 3.2 and 3.3 that (some) purely syntactic accounts of obligatory control fail to predict the *control into NP* generalisation. Movement-based theories of control under-generate in this novel environment, given the lack of motivation for A-movement out of the English prenominal genitive position. Likewise, without further stipulation, PRO-based models of control either predict both EC and PC into nominals, or neither. Likewise, the binding of a PRO within the DP is challenged by the *overt nominal subjects under control* generalisation. That is, any PRO binding would presumably have to occur across an overt DP possessor. Furthermore, in section 3.4 we saw that the purely semantic control model of Culicover and Jackendoff (2005, 2006) faced similar difficulties. In this case, their semantic model over-generates without further stipulation: there is no *prima facie* reason why the semantic binding that enforces EC into nominal complements would not be active in PC predicates.

We then considered the notion that the EC/PC distinction correlates with a semantic/syntactic division of labour, respectively. This was the view defended explicitly in Wurmbrand (2002) on the back of German restructuring and binding data. Given the appropriate assumptions regarding the event-denoting properties of English nominalisations, we discerned that Wurmbrand's model accurately predicts the distribution of control in the nominal domain, as noted by the *control into NP* generalisation. That is, EC as a semantic phenomenon is predicted to manifest in any appropriately eventive complement, regardless of syntactic status. PC, on the other hand, will only be enforced in the appropriate syntactic environment (for Wurmbrand, this was keyed to the distribution of PRO in the clausal left-periphery).

Similar in spirit to Wurmbrand (2002), Stiebels (2007) provides a preliminary typology of complement control across a variety of languages. She identifies two types of control phenomena: (i) inherent control and (ii) structural control. Furthermore, Stiebels distinguishes between two types of controlled complements: (i) control-inducing complements, and (ii) control-neutral complements. Inherent control predicates are such that they will enforce control into any complement, even if it is control-neutral. This class of predicate corresponds to our EC class of predicates, which enforce EC in both clauses and nominals. Structural control, on the other hand, results from the complementation of a control-inducing complement; structural control predicates will not enforce control in control-neutral complements. Thus, if nominals are control-neutral, Stiebels' typology correctly predicts the *control into NP* generalisation.

4. NOMINALISATION

4.1. Introduction

In this chapter we will investigate the underlying composition of English de-verbal nominalisations, in order to construct formal syntactic/semantic accounts of control into said nominals in subsequent chapters. We saw in chapter 2 that CEN and SEN complements to control predicates behave strikingly similar, despite apparent differences in their composition. As such, our focus in this chapter will be to explore the hypothesis that SENs and CENs are compositionally equivalent. Furthermore, we will strive to defend this hypothesis and any subsequent formal analyses with evidence independent from the generalisations made in chapter 2.

In section 4.2 we provide some theoretical preliminaries regarding English de-verbal nominalisation, specifically regarding the differentiation between CENs and SENs. In 4.3 we provide an alternative look at the empirical generalisations that feature prominently in nominalisation theory. We will see that many of the supposed differences between CENs and SENs largely disappear when viewed from a different perspective. Then in section 4.4 we construct a working, event-based formalisation of English de-verbal nominalisation based on work by Adger (2012). We conclude in section 4.5.

4.2. Theoretical background

The precise underpinnings of nominalisation phenomena in English have been subject to much scrutiny within the generative tradition since at least (Chomsky 1970). For Chomsky, a lexical item is categorically neutral, and thus may be inserted into different syntactic environments while retaining critical lexical information (such as a theta-grid, in the case of predicates). This hypothesis was later restated in the form of Distributed Morphology (Halle and Marantz 1993; Marantz 1997). The syntactic structure of the DP in its more verb-like iterations was likewise the subject of Abney's (1987) seminal work. However, it is Grimshaw's (1990) nominal typology that has defined nominalisation theory for nearly three decades, and as such will be our jumping off point.

4.2.1. Grimshaw's typology

As outlined previously, Grimshaw (1990) distinguishes between three types of English de-

verbal nominalisation: (i) CENs, which denote events and project arguments, as in (20a), (ii) SENs, which denote events but do *not* project arguments (20b), and (iii) RNs which are neither event-denoting nor argument-projecting (20c).

- (168) a. The examination of the patient (took three hours). CEN
 b. The examination (took three hours). SEN
 c. The examination (was photocopied in green ink). RN

Grimshaw’s framework stands in stark opposition to much of the previous nominalisation scholarship, which largely operated under the assumption that arguments are always optional inside the noun phrase (cf. Anderson 1983; Higginbotham 1983; Dowty 1989). Rather, Grimshaw argues that this perceived optionality is due to a robust ambiguity between the nominal categories in (20). However, the arguments themselves are never truly ‘optional’; if a nominal is a CEN, the internal argument is *obligatory*, whereas if a nominal is an SEN or an RN, the internal argument is *impossible*.

To motivate this typology, Grimshaw observes a number of diagnostics that are meant to disambiguate the obligatorily argument-projecting CENs from the non-argument-taking SENs/RNs. The table in (169), adapted from Borer 2014, serves to summarise the generally accepted syntactic properties that distinguish CENs on the one hand from SENs/RNs on the other.

(169)	<i>CENs</i>	<i>SENs/RNs</i>
a.	Internal argument obligatory	All complement optional
b.	Agent-oriented modifiers	No agent-oriented modifiers
c.	Event modifiers	No event modifiers
d.	Subjects are arguments	Subjects are adjuncts
e.	<i>by</i> -phrases are arguments; in Hebrew, select <i>al-yedey</i>	<i>by</i> -phrases are adjuncts; in Hebrew, select <i>šel me’et</i>
f.	Implicit argument control	No implicit argument control
g.	Aktionsart modification	No aktionsart modification

The criterion that CENs but not SENs/RNs take an obligatory internal argument is captured in (169a) and provides the basis for disambiguation of the nominal system. Namely, any instantiation of a CEN-like property (e.g., the presence of an agent-oriented modifier) will entail the presence of underlying argument structure, and thus will render ungrammatical

any omission of the internal argument. Beginning with (169b) and (169c), Grimshaw found that only CENs will permit agent-oriented modification, as well as event-modification. For example, we see in (170) that while a CEN will readily accept the agent-oriented modifier *deliberate*, SENs and RNs do not. The same is true of the event-modifier *constant* in example (171).

- | | | |
|----------|---|-----|
| (170) a. | The (deliberate) examination of the patient took three hours. | CEN |
| b. | The (*deliberate) examination took three hours. | SEN |
| c. | The (*deliberate) examination was photocopied in green ink. | RN |
| | | |
| (171) a. | The (constant) examination of the patient took three hours. | CEN |
| b. | The (*constant) examination took three hours. | SEN |
| c. | The (*constant) examination was photocopied in green ink. | RN |

Furthermore, as stated in (169d) above, Grimshaw argued that prenominal genitive arguments of CENs are obligatorily interpreted as external arguments of the underlying verbal event (e.g., as agent; cf. Kratzer 1996 for counter-examples). Furthermore, she noted that the prenominal genitives of corresponding SENs and RNs are barred from this same interpretation. To illustrate, consider the CEN in (172a), in which *the instructor* is interpreted as an agent of *examination*. We find that the SEN construction in (172b) rejects an agentive interpretation in that same prenominal, as does the RN construction in (172c). Note that there are of course licit alternative interpretations for the prenominal genitives in (172b,c), but these are largely orthogonal to Grimshaw's claims.¹¹

- | | | |
|----------|---|-----|
| (172) a. | The instructor's examination of the patient took three hours. | CEN |
| b. | *The instructor's examination took three hours. | SEN |
| c. | *The instructor's examination was photocopied in green ink. | RN |

Similarly, according to Grimshaw, agent-naming *by*-phrases are only possible in CEN constructions; as illustrated in (173), the lack of argument structure in SEN/RN constructions results in ungrammaticality. Note that agent-naming *by*-phrase adjuncts

¹¹ In section 4.3 we will return to these alternative interpretations of the prenominal argument, and argue that their presence here confounds Grimshaw's typology. We will instead contend that – in SENs specifically – the possible interpretations of the prenominal genitive are entirely predictable from the event-structure of the underlying verbal predicate.

contrast sharply with *by*-phrases denoting authorship. Although English does not differentiate morphologically between agent- and author-denoting *by*-phrases, other languages such as Hebrew do. As expected, Hebrew CENs take agent-denoting *by*-phrases (headed by *al-yede*), while SENs/RNs may license only author-denoting ones (headed by *šel me'et*) (Borer 2003).

- | | | |
|----------|--|-----|
| (173) a. | The examination of the patient by the doctor (took three hours). | CEN |
| b. | *The examination by the doctor (took three hours). | SEN |
| c. | *The examination by the doctor (was photocopied ...). | RN |

Moving on, (169f) notes that – like verbal passives – only nominalisations with argument structure may control into an infinitival purpose clause, as illustrated in (174a,b). Note that Grimshaw followed Williams (1985) and Lasnik (1988) in assuming that infinitival adjuncts to passives could be controlled by the matrix event (hence the term ‘event control’). We find in (174c,d) that non-argument-projecting nominals may not take these same purpose clause adjuncts. For Grimshaw, this pattern followed if CENs alone denote events ‘in the relevant sense’ (Grimshaw 1990:58), a notion that is equally compatible with VP approaches on the assumption that verbal structure is synonymous with event structure.

- | | | |
|----------|--|----------------|
| (174) a. | The book was translated (in order) to make it more widely available. | <i>passive</i> |
| b. | The translation of the book (in order) to make it more widely available. | CEN |
| c. | *The translation (in order) to make the book more widely available. | SEN |
| d. | *The exam (in order) to assess aptitude. | RN |

Finally, the ability for a nominalisation to license aktionsart modifiers (as in (169g)) constitutes perhaps the strongest evidence for the underlying argument-structure of CENs. As we see in (175a,b), unambiguous (AS-projecting) CENs license aktionsart modifiers, and (critically) the (a)telic properties of the de-verbal CEN mirror those of the underlying verbal predicate. Unambiguous RNs, on the other hand, may never license aktionsart modifiers (see (175c,d)).

- | | | |
|----------|--|------|
| (175) a. | The doctor observed the patient for several weeks/*in several weeks. | Verb |
| b. | The observation of the patient for several weeks/*in several weeks. | CEN |
| c. | *The exam/trip/race in several days/for several days. | RN |

Thus, Grimshaw's suite of disambiguating diagnostics converge on a picture of English de-verbal nominalisation such that CENs are derivationally unique. That is, CENs but not SENs/RNs are compositionally derived from the base verb in some fashion that preserves the argument-structure of the underlying predicate. This preserved argument structure is subsequently complicit in the nominal's ability to license grammatical features, such as agent-oriented modifiers and implicit argument control. The implication, then, is that SENs and RNs are more or less equivalent in their lack of eventivity, given the empirical pattern in (169). As we will see in 4.2.2, this generalisation is at the heart of the majority of contemporary theories of nominalisation, such that CENs are always compositionally unique in some theory-dependent fashion, as opposed to SENs and RNs, which are generally analysed as being common referential NPs.

4.2.2. AS-centric approaches to nominalisation

In this section, we will consider a number of previous accounts of English de-verbal nominalisation that may be best described as AS-centric (or argument-structure-centric). That is, the approaches below consider the presence or absence of argument structure within the nominalisation to be the defining characteristic in the nominal derivation. This perspective contrasts with that of nominalisation approaches which may be considered E-centric (or event-centric), the nature of which will be discussed in section 4.3. Note that, in this section, we will focus primarily on the derivational contrasts between unambiguous CEN and RN nominalisations; SENs and their place in the literature will be taken up again in section 4.2.3.

Grimshaw's (1990) account constitutes the first explicitly AS-centric approach to English de-verbal nominalisation, following her typology of the nominal system and its inherent ambiguity. As briefly discussed in chapter 3, Grimshaw assigns to unambiguous RNs the same level of complexity as unambiguous referential NPs. Thus, potentially ambiguous RNs such as *examination* and *assignment* are semantically equivalent to unambiguously referential NPs, such as *dog* and *window*. To this end, Grimshaw invokes

the inherently nominal external argument *R* (cf. Higginbotham 1985). Unlike typical verbal/event arguments, there is no sense in which *R* is a theme, experiencer, goal, agent, etc., but rather its interpretation will be idiosyncratically determined depending on a number of factors, including the nominal and the nominalising affix.

CENs, on the other hand, do not invoke the *R* argument in Grimshaw's system. Rather, nominals that have event structure may take the eventive external argument *Ev* instead, which is crucially argument-structure preserving, and yields an event interpretation. In Grimshaw's system, *Ev* is borne on a nominalising affix such as *-(a)tion* and *-ment*. Furthermore, Grimshaw accounts for the ambiguity in the nominal system by asserting a systematic lexical ambiguity in many English nominal affixes. That is, the affix *-(a)tion* is ambiguous between *Ev* and *R*, and thus de-verbal nominalisations derived via *-(a)tion* are ambiguous between event and non-event readings.

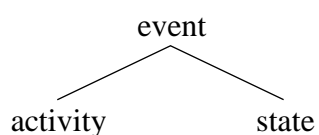
It is useful to note here that, for Grimshaw, argument structure involves the interaction between a predicate's thematic properties and its aspectual properties. In relation to the former, Grimshaw assumes the thematic hierarchy in (176) in order to represent argument structure as prominence relations among event participants of a given predicate.

(176) (Agent (Experiencer (Goal/Source/Location (Theme)))

(Grimshaw 1990:8)

As to the aspectual properties of a predicate's argument structure, Grimshaw assumes that each predicate is associated with a decompositional event structure in the lexicon. For example, Grimshaw proposes that the verb *construct* is associated with an event structure that decomposes into (i) an activity in which some subject *x* participates in a constructing-activity, and (ii) a resulting state in which some object *y* is created (as illustrated in (115), from (Grimshaw 1990:26)).

(177)

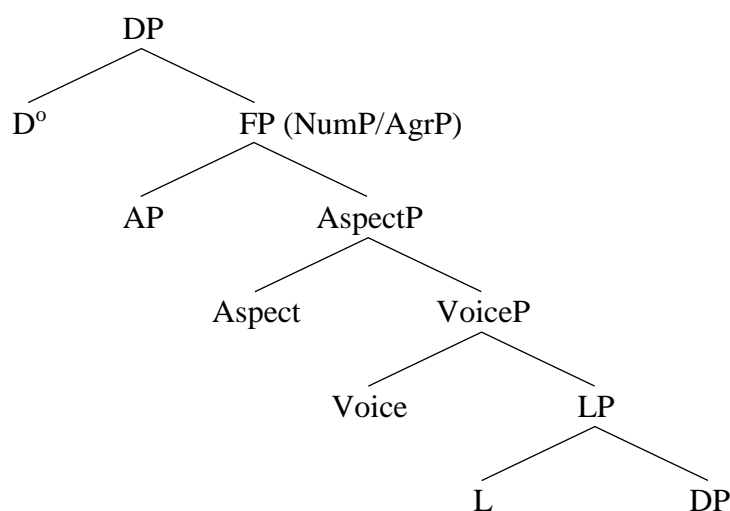


Given that a decompositional event structure of the sort in (115) is a necessary condition for argument structure in Grimshaw's analysis, it follows that any nominal lacking event structure will also lack argument structure.

Alexiadou (2001) may be considered an explicit defence of the AS-centric view

from the perspective of the VP-approach to nominalisation (see chapter 3). For Alexiadou, the syntactic structure instantiated in (178) represents the maximum possible functional structure permissible in nominalisations cross-linguistically (cf. Alexiadou et al. 2008:528). Note that, for Alexiadou (2001), VoiceP does not differentiate between Kratzer's (1996) external argument-introducing Voice projection and the structural case-assigning v P of (Chomsky 1995).¹² LP corresponds roughly to the root phrase (\sqrt{P}) featured prominently in the framework of distributed morphology (DM), and Aspect is responsible for valuing accusative (structural) case.

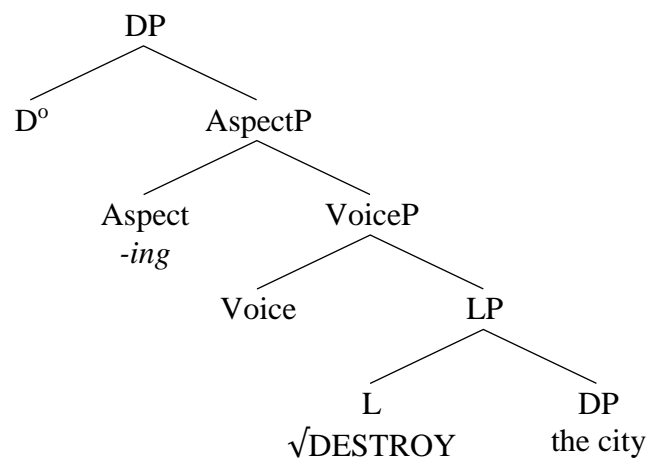
(178)



Alexiadou argues that so-called *-ing* nominalisations (also called POSS-*ing* gerunds) instantiate (nearly) the full structure given in (178). For example, the structure in (179) below provides an adequate representation for the gerundive construction *Caesar's destroying the city*. The DP complement *the city* is assigned structural accusative case by the affix-bearing aspectual head, and AspectP merges directly with DP (thus explaining the incompatibility of adjectival modifiers). Note that, for the sake of simplicity, we abstract away from the genitive subject.

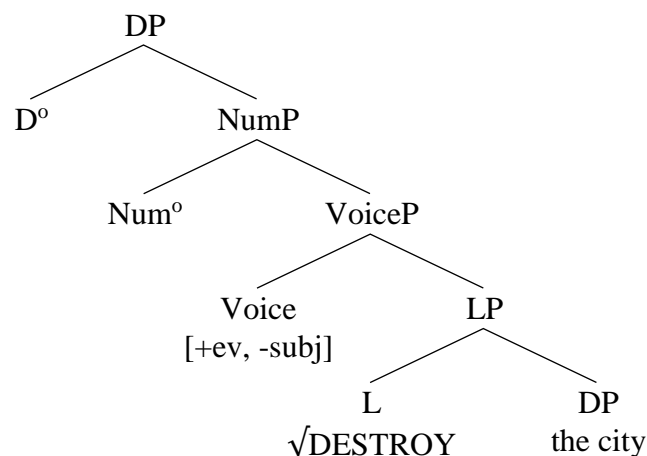
¹² See (Harley 2009) for some recent discussion on the tension between v P and VoiceP in the domain of nominalisation.

(179)



Nominalisations headed by *-(a)tion*, on the other hand, do not assign accusative case to their internal complements, and they *are* compatible with adjectival modification. Thus, the nominal structure in (180) contains a NumP and lacks AspectP. Note that Alexiadou assumes that the Voice head in these constructions is eventive but passivized (viz. it does not license an external argument).

(180)



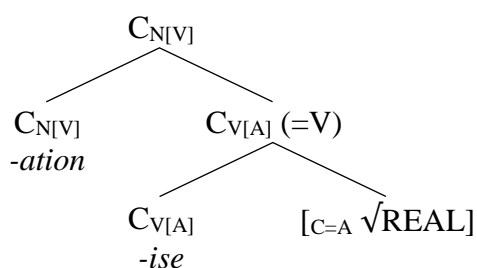
Crucially, the complement of the lexical root is only licensed in the eventive environment created by the extended verbal projection (in this case, a Voice head valued for [+ev]). Thus, like Grimshaw, the event-denotation and argument-projecting properties of CENs are packaged in tandem. However, whereas Grimshaw utilised an *Ev* argument, Alexiadou appeals to actual verbal event material beneath the nominalising affix.

Perhaps the strongest form of the AS-centric approach to nominalisation is encapsulated in a series of works by Borer (2003, 2005a, 2005b, 2012, 2014), who defends the hypothesis that the root of a nominalisation (or indeed, any phrase) is itself grammatically meaningless: a non-structured package of phonological information and some amount of encyclopaedic/real-world knowledge. Like Alexiadou, Borer assumes that

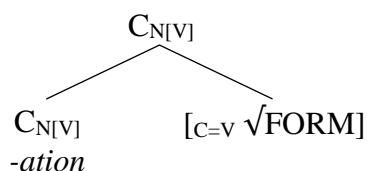
the same event/argument-denoting syntactic structure found in the verbal domain is responsible for the event/argument-denoting properties of de-verbal and de-adjectival CEN nominalisations. Unlike Alexiadou, however, Borer’s account is couched in the XS-model of grammar developed in (Borer 2005a, 2005b).

Within Borer’s XS-model, functional projections termed ‘categorial functors’ (henceforth, C-functors) are responsible for partitioning syntactic structure into constituents (Borer 2014:80). Concretely, a C-functor $C_{X[Y]}$ projects category X and defines its complement as equivalent to Y. By way of illustration, consider the examples in (181). The C-functor $C_{N[V]}$ – which, in English, may spell out as a nominalising affix such as *-ation*, *-ment*, etc. – projects N and defines its complement as V-equivalent ($C=V$). $C_{N[V]}$ then merges with some node M, which may itself be a C-functor (as in (181a)), or a category-neutral root (181b). Note that the C-functor $C_{V[A]}$ follows the same principles: it projects V and defines its complement as A-equivalent.

(181) a.



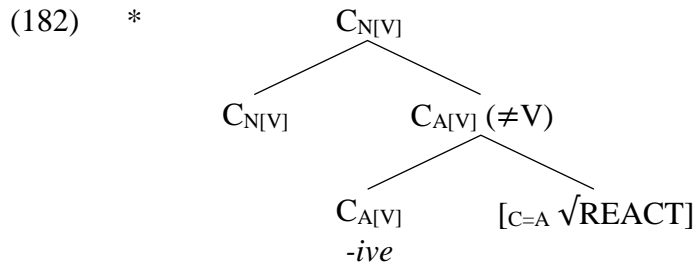
b.



This notion of defining a complement as C-equivalent has two distinct effects in the syntax. First, as in (181a), the complement of $C_{N[V]}$ is itself a C-functor, projecting V. Thus, V-equivalence is trivial in this example – it becomes a matter of category checking. In (181b), however, the complement of $C_{N[V]}$ is a category-neutral root, and thus it is defined as being V-equivalent by virtue of merging with $C_{N[V]}$.¹³ By hypothesis, then, example (182) is

¹³ In this respect, C-functors may look similar to the functional categorisers *v*, *n*, *a*, etc., found in the DM literature (cf. Halle and Marantz 1993; Marantz 1997, 2001). However, Borer’s XS-model is crucially different, in that non-categorical phrases (e.g., \sqrt{Ps}) are impossible, and category is determined by virtue of merge, rather than by the nature of some (often covert) categoriser.

ungrammatical due to the conflict between the V-selecting C-functor $C_{N[V]}$ and the A-projecting C-functor $C_{A[V]}$.



As well as C-functors, Borer’s XS-model distinguishes semantic S-functors, which are primarily implicated in the valuing of functional nodes within an extended projection (ExP segments). As an example, consider the following extended projection denotation: $D \in \{Ex[N]\}$. Here, D is an ExP segment that will be valued by an S-functor (e.g., THE), and is a member of the set of ExP segments that *collectively* define their complement as N-equivalent (Borer 2014). This set of ExP segments will also include functional categories such as NUM or CL (classifier), and thus we may assert $NUM \in \{Ex[N]\}$ and $CL \in \{Ex[N]\}$.

Additionally, the extended projection consists of the C-core: the domain of C-labelled nodes dominated by the functional ExP sequence. The only obligatory part of a C-core is a C-equivalent root, though each instantiation of a C-functor constitutes a C-core, with the highest iteration defined as the *maximal* C-core (Borer 2014, ex. 31).

(183) *C-core*_{DEF}

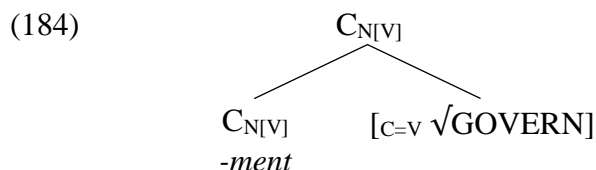
- a. α is a C-core iff α is C-equivalent and there is a β such that β is contained in α and β is a root, and for all x such that α dominates x and x dominates β , x is C-equivalent
- b. α is maximal iff there is no γ such that γ is C-equivalent and γ immediately dominates α

(Trivially, recall that all instances of C are C-equivalent)

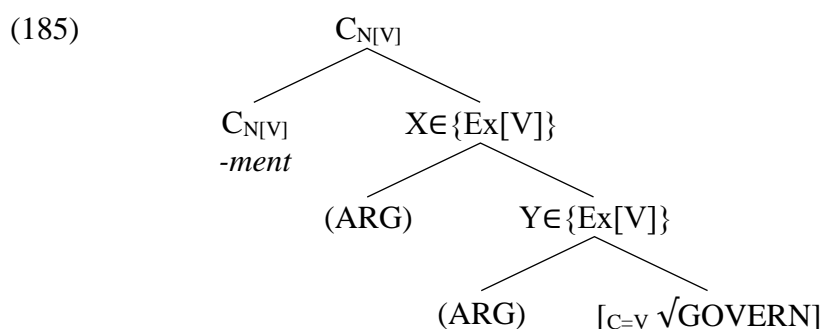
Finally, along with category-defining C-functors and semantic S-functors, Borer’s XS-model employs category neutral roots in the derivation of words and phrases. However, unlike other systems of grammar which leverage roots, Borer is explicit in assigning them the role of pure phonological indices. That is, roots do not have content, nor do they contribute any syntactic/semantic information to the derivation. Note that the nature of ‘content’ is distinctly extra-linguistic in Borer’s framework; it consists of encyclopaedic

knowledge and does not inform the grammar. Content, in this sense, contrasts with semantic S-functores, which contribute formal semantic meaning to a given structure.

With the fundamentals of the XS-model in mind, consider the derivation of the R-nominal *government* in (184). The C-functor $C_{N[V]}$ projects the category N and defines its complement – the root GOVERN – as V-equivalent ($C=V$). The derivation yields a maximal C-core projecting N, which may subsequently combine with segments of the extended nominal projection (e.g., members of the set $ExP[N]$).



Moving on to more complex nominalisation constructions, we see in (185) that the CEN *government* (as in *the constant government of unruly citizens*) involves the same category-neutral root, as well as the same maximal C-core ($C_{N[V]}$). However, the derivation of the nominal now includes a number of segments from the extended verbal projection. Specifically, Borer’s analysis of CENs includes beneath the nominal C-functor the internal-argument introducing segment $Y \in \{Ex[V]\}$ and the segment $X \in \{Ex[V]\}$, which introduces the event argument, as well as (potentially) an external argument. Borer argues that it is the presence of these verbal segments that uniquely characterises the derivation of CENs, and thus accounts for their behaviour regarding Grimshaw’s diagnostics in (169).



Note that in both the RN construction in (184) and the CEN in (185), the underlying root is identical in that both are rendered V-equivalent. The primary difference, then, lies in the *manner* in which those roots are rendered V-equivalent. In the case of the RN, the root is defined as V-equivalent by merging with the nominal C-functor $C_{N[V]}$. Conversely, the root of the CEN construction is made V-equivalent by virtue of combining with segments of the

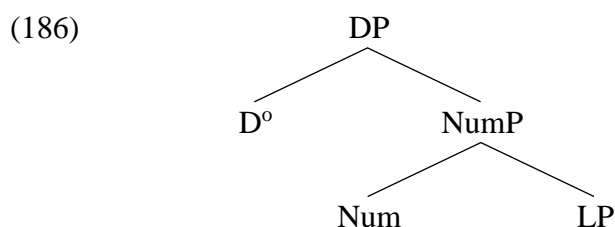
extended verbal projection.

4.2.3. SENs and AS-centricity

Unlike CENs, SEN constructions inhabit an awkward place in most AS-centric approaches to de-verbal nominalisation. On the one hand, they denote (potentially) dynamic events and have a comparable meaning to their CEN counterparts. On the other, they may not take overt arguments, and are alleged to have the grammatical behaviour of RNs or canonical referential noun phrases.

In Grimshaw (1990), SENs are treated – both implicitly and explicitly – as comparable to RNs, as far as their syntactic/semantic properties are concerned. Recall that Grimshaw’s account hinged on the alternation between two possible external arguments in the noun phrase: *E_v* and *R*. According to Grimshaw, only CENs have the external argument *E_v*, which enforces an event reading and preserves the argument structure of the underlying verbal base. SENs and RNs both have the distinctly nominal argument *R*, the interpretation of which is decidedly freer than *E_v*. Thus, SENs are functionally no different from uncontroversial referential entities, the only interpretable difference being that they refer to an event.

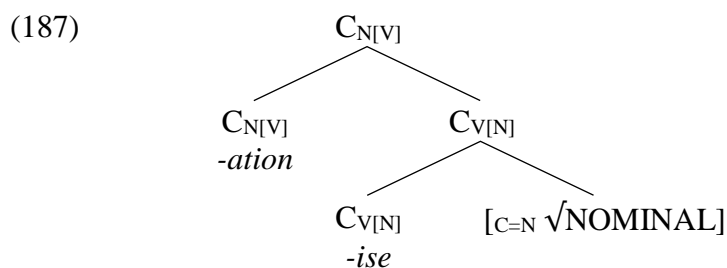
SENs are treated similarly in Alexiadou (2001). Recall that, for Alexiadou, CENs are derived from category-neutral root phrases (LPs, see (178-180) above). In CEN contexts, these LPs select their internal arguments directly, however it is the distinctly verbal environment in which these LPs appear that licenses internal argument projection. Namely, CENs in this system include a Voice projection that is [+event]. Conversely, Alexiadou provides the structure in (186) for RNs, and by implication SENs. Note that, in this structure, there is no verbal projection, and the category-neutral LP is selected directly by the nominal projection Num.



Borer (2003) provides the most explicit categorisation of SENs as functionally equivalent to RNs. Working from Grimshaw’s three-way categorical split between CENs, SENs and

RNs, Borer proposes that only two nominal categories are necessary: (i) AS-nominals, which are those nominalisations that project argument structure, and (ii) R-nominals, which are those that do not. The R-nominal category is heterogenous, in that it includes not only morphologically complex SENs and RNs, but also simplex event-denoting NPs such as *trip* or *event*.

Consider derivationally complex R-nominals (e.g., those that are ambiguous between AS- and R-nominal). We have already seen in (184) above a potential treatment for the SEN *government* in Borer’s XS-model. In (187), I provide a hypothetical structure of the R-nominal *nominalisation* in Borer’s framework (abstracting away from any morphological complexity within *nominal*). In either case, the nominal C-functor $C_{N[V]}$ merges with a V-equivalent complement, but no segments of the extended verbal projection are present.



It is critical to note that the R-nominal structure in (187) will permit either an RN interpretation (e.g., *the nominalisation is written on the board*) or an SEN interpretation (e.g., *that nominalisation took several minutes*); there is nothing in the syntax to enforce one or the other.¹⁴

Thus, in those approaches to derivational nominalisation for which argument structure is the critical ingredient, SENs are often given the same treatment as RNs. Both are considered ‘purely nominal’, in the sense that SENs and RNs only ever implicate the same functional structure as canonical referential nouns. On the assumption that argument structure and event structure are isomorphic (cf. Borer 2005a, 2005b; Ramchand 2008; Pylkkänen 2008, a.o.), it follows that SENs do not constitute structured events in any grammatically relevant sense. This logical consequence will be challenged in the following section.

¹⁴ The same is implicitly true of the RN structure in (186).

4.3. Motivating an E-centric framework¹⁵

Having discussed the theoretical tenets of an AS-centric approach to nominalisation, this section will explore the notion of an Event-centric (henceforth, E-centric) approach to the same problem. By ‘E-centric’, we mean an analysis of nominalisation in which nominal type is keyed to the presence or absence of an underlying grammatically active event. In order to motivate an E-centric analysis, we will demonstrate that – *contra* Grimshaw (1990) and much subsequent work – CENs and SENs in fact pattern together regarding a range of diagnostics.

In section 4.3.1 we will discuss the nature of agent-oriented modification and event modification in the nominal domain, and will conclude that neither diagnostic successfully isolates derivational nominalisations from referential nouns. Then in 4.3.2 we will revisit the remaining diagnostics utilised by Grimshaw (1990), and will show that CENs and SENs behave uniformly. Section 4.3.3 will focus on the aktionsart properties of English nominalisations, and in section 4.3.5 we will admit another diagnostic to Grimshaw’s suite of tests: compositionality of meaning.

4.3.1. Problematic diagnostics

Before discussing the ways in which SENs and CENs pattern uniformly, it must be pointed out that a number of Grimshaw’s (1990) diagnostics fail to isolate compositionally derived nominalisations from otherwise referential noun phrases in coerced event interpretations. Specifically, the distribution of agent-oriented modifiers (169b) and event modifiers (169c) is far more general than Grimshaw’s typology implies. First, consider the event modifiers *frequent* and *constant*; example (188) (see (171) above) once again illustrates Grimshaw’s observation that while CENs will license these event modifiers, SENs and RNs will not.

- | | | |
|----------|---|-----|
| (188) a. | The (constant) examination of the patient took three hours. | CEN |
| b. | The (*constant) examination took three hours. | SEN |
| c. | The (*constant) examination was photocopied in green ink. | RN |

This generalisation is challenged by Moulton (2014), who observes that SENs systematically disobey the pattern in (188) as long as a pragmatically viable interpretation

¹⁵ For a number of observations largely in line with the observations presented here, see (Alexiadou 2009; Lieber 2016)

is available (see (189)). This potential counter-example was already noted by Grimshaw (1990:178, fn. 1) but left unaddressed.

- (189) a. The constant construction next door will bother me.
- b. More frequent demonstration is required.
- c. Frequent change is necessary if you want your organisation to stay competitive.

On the basis of (189), Moulton pursues an analysis in which CENs and SENs share an underlying event structure (in his case, an event variable in the Davidsonian sense). Indeed, this is similar to the analysis which we will develop in section 4.4. However, once we move beyond the scope of derived nominals, we find that the observations in (189) are in fact misleading; event modifiers do not differentiate between derived CEN/SEN constructions and canonically referential nouns coerced into an eventive interpretation. As illustrated in (189), the referential nouns *noise*, *problem*, *mistake*, and *infidelity* will license event modifiers in certain contexts. Note also that in each case the modified noun phrase is singular, despite Grimshaw's (1990) claim that non-event-denoting nominals must be plural in order to license event modifiers.

- (190) a. This **constant** noise will be the death of me.
- b. This **frequent** mistake may cost the company millions.
- c. The **constant** problem in Bill's marriage is his **frequent** infidelity.

Furthermore, we find that the same observations hold true of the agent-oriented modifier *deliberate* in the nominal domain. In example (191) (see also (170) above) we provide Grimshaw's observations concerning the disambiguating properties of agent-oriented modifiers. Then in (192) we refute this observation; just as was the case with SENs in (189) above, SENs may license agent-oriented modifiers so long as a plausible interpretation is available.

- (191) a. The (deliberate) examination of the patient took three hours. CEN
- b. The (*deliberate) examination took three hours. SEN
- c. The (*deliberate) examination was photocopied in green ink. RN

- (192) a. The deliberate examination revealed previously unnoticed anomalies.
- b. Years of deliberate humiliation are at the root of Howard's commitment issues.
- c. Deliberate provocation often leads to heartache.

Once again, this seems to provide some evidence that SENs actually pattern like CENs, despite the general consensus in the literature. However, just as was the case with event modifiers, we once again find that the distribution of agent-oriented modifiers extends beyond derived nominalisations, as illustrated in (193). In each case, the use of *deliberate* forces an agentive interpretation of some relevant event participant. Critically, we interpret this participant in relation to an event that has no explicit verbal source (e.g., *Mary's deliberate mistake = the mistake that Mary made deliberately*).

- (193) a. Mary's deliberate mistake may cost this company millions.
b. The problem in Bill's marriage is his deliberate infidelity.
c. John's deliberate racket keeps the whole neighbourhood up at night.

Ultimately, a formal analysis of event and agent-oriented modifiers is beyond the scope of this thesis. However, the observations above suggest that modifiers like *frequent* and *deliberate* contribute more semantic force to any given nominal structure than is usually assumed. Perhaps they are themselves coercive, in that a referential nominal such as *infidelity* is coerced into some salient eventive interpretation by virtue of composition with the modifier.

It is clear, however, that the claim that these modifiers are diagnostic of some unique compositional eventivity is problematic: event and agent-oriented modification is not limited to CENs, nor is it limited to compositionally derived nominalisations. Of course, there are a number of theoretical escape hatches through which we might rescue Grimshaw's generalisations. For example, we may argue that the event modified in the case of CENs is crucially different from the 'event' modified in the case of SENs and non-derived noun phrases. However, without any clear empirical distinction between the two types of modification, there is little motivation for such a stipulation.

4.3.2. Reframing the empirical landscape

Having put aside the event and agent-oriented modification diagnostics as unreliable, this section will consider the remaining tests that motivate Grimshaw's typology (aside from aktionsart modification). Immediately, we notice that the extensive distribution of agent-oriented modifiers in the nominal domain obscures the *subjects are arguments* diagnostic listed in (169d). Consider the paradigm in (194), in which the status of the prenominal genitive is assumed to correlate with the availability of the agent-oriented modifier

deliberate. From this perspective, it appears that SENs and RNs pattern together.

- | | | |
|----------|--|-----|
| (194) a. | The doctor's (deliberate) examination of the patient took three hours. | CEN |
| b. | The doctor's (*deliberate) examination took three hours. | SEN |
| c. | The doctor's (*deliberate) examination was photocopied in green ink. | RN |

However, if *deliberate* is as widely available in the English noun phrase as is suggested by the examples in (193), then its appearance in (194a) cannot be considered evidence for a 'true' external argument in CEN constructions. Instead, (194a) simply demonstrates that CENs follow the general pattern in which event-denoting NPs license agent-oriented modification, regardless of internal composition. Likewise, the unavailability of *deliberate* in the RN construction in (194c) is equally predictable: given the hypothesis that agent-oriented modifiers either enforce or are compatible with only an event interpretation, the distinctly referential reading of the RN will be incompatible. The real mystery, then, is why the event-denoting SEN in example (194b) does not permit the agent-oriented modifier, despite its otherwise general availability in event-denoting noun phrases.

Here we pursue a solution such that the ungrammaticality of *deliberate* in (194b) is due not to the impossibility of prenominal arguments in SEN constructions, but rather to the fact that the most salient interpretation of *the doctor* in (194b) is as the internal argument (e.g., the theme) of the nominal event. To this end, we appeal to Smirnova's (2015) classification of nominal type by semantic category (see also Levin 1993). For Smirnova, de-verbal nominalisations fall into three distinct semantic classes, based on the semantic class of the underlying predicate: (i) patient-dominant nominals, which encode their internal argument most prominently, (ii) agent-dominant nominals, which encode their external argument most prominently, and (iii) shared-dominant nominals, which do not distinguish between internal and external arguments by means of prominence. The table in (195) – adapted from Smirnova (2015) – provides a non-exhaustive cross-section of nominalisations by semantic class.

(195) a. Patient-dominant nominalisations

Change-of-state: corrosion, diffusion, disintegration, explosion; *Amuse*: alienation, consolation, humiliation, satisfaction; *Murder*: assassination, elimination, execution; *Destroy*: annihilation, demolition, destruction; *Banish*: extradition, removal; *Appoint*: adoption; *Begin*: termination; ...

b. Agent-dominant nominalisations

Admire: admiration, appreciation, fear, hatred, resentment; *Correspond*: collision, competition, cooperation; *Inherently Directed Motion*: ascent, descent, entry; *Avoid*: evasion, avoidance; *Chase*: chase, pursuit; *Conjecture*: assertion, suspicion; *Say*: proclamation, suggestion; ...

c. Shared-dominant nominalisations

Characterise: certification, characterisation, description, identification; *Sight*: examination, inspection, investigation, observation; *Judgement*: celebration, compensation, punishment; *Assessment*: analysis, assessment, evaluation; ...

Thus, the nominalisation *destruction* belongs to Smirnova's patient-dominant class, and by hypothesis encodes its internal argument more prominently than any other. In line with this, the prenominal genitive in (196) is obligatorily interpreted as the theme of a destroy-event; the ungrammaticality of *deliberate* may be analysed as the attribution of intentionality to the internal argument of a change-of-state predicate.

(196) The barbarians' (*deliberate) destruction (took three hours).

Conversely, nominals such as *ascent* and *pursuit* are, in Smirnova's framework, agent-dominant nominalisations, and as such will most prominently make an agentive interpretation available to any prenominal genitive arguments. We therefore predict that agent-oriented modifiers will be perfectly acceptable in these environments; we see in (197) that this prediction is borne out.

(197) a. The climber's (deliberate) ascent (took three days).

b. The detective's (deliberate) pursuit (lasted for three hours).

Finally, nominalisations such as *inspection*, *desertion* and indeed *examination* belong to Smirnova's shared-dominant class; by hypothesis, these nominals will not make one particular interpretation more salient than the other in the prenominal genitive position. As illustrated in (198), a suitable context allows the prenominal possessor of a shared-dominant nominalisation to be assigned an agentive interpretation. Subsequently, the agent-oriented modifier *deliberate* is licensed in this distinctly SEN environment.

- (198) a. The doctor's (deliberate) examination revealed previously unnoticed anomalies.
 b. The manager's (deliberate) inspection revealed a web of lies and misconduct.
 c. The soldier's (deliberate) desertion occurred late last night.

Consider now the contrast between (194b) and (198): SENs derived from shared-dominant predicates present a predictable ambiguity concerning the interpretation of their prenominal genitive argument. Furthermore, this ambiguity correlates with the (un)availability of agent-oriented modification, a feature that we have observed previously to be generally available to event-denoting nouns.

Moving on to *by*-phrases inside nominalisations (see (169e)), recall that English does not exhibit any morphological differences between *by*-phrases that name agents and those that name authors. On the other hand, languages such as Spanish, Hebrew and Brazilian Portuguese show a clear morphological distinction between the two types of prepositional phrase. Borer (2003) notes that, for these languages, agentive *by* is obligatory in AS-nominal constructions (viz. CENs), and that only authorship *by* is available to R-nominals (viz. SENs and RNs). As illustrated in (199a), Brazilian Portuguese CENs behave as expected: the agent-naming preposition *pelo* (*por* + *o*) is obligatory in this environment. Likewise, the non-eventive referential noun in (199b) may only license the author-naming preposition *de*.

- (199) a. O exame do homem pelo/*de médico
 The examination of.3SG.MASC man by/*of doctor
 'The examination of the patient by the doctor ...'
- b. O livro de/*pelo Chomsky
 The book of/*by Chomsky
 'The book by Chomsky ...'

However, the attribution of agent-naming *by* to CENs and authorship *by* to all SENs and RNs is too simplistic. The examples in (200) demonstrate that any SEN in Brazilian Portuguese that is compositionally derived from an underlying verbal predicate obligatorily takes the agent-naming preposition *pelo*, *contra* the generalisation in (169e). Furthermore, authorship PPs are entirely unavailable in this environment, as any appearance of *de* yields an internal argument interpretation (hence, *de* is marked with # rather than * below).

- (200)a. O exame pelo/#de médico ...
 The examination by/#of doctor
 ‘The examination by the doctor ...’
- b. A investigação pelo/#de ministério público ...
 The investigation by/#of ministry public
 ‘The investigation by the public ministry ...’
- c. Destruição pelo/#de alcoolismo ...
 Destruction by/#of alcoholism
 ‘Destruction by alcoholism ...’

Finally, the *implicit argument control* diagnostic (169f) provides another opportunity to highlight the similarities between CENs and SENs. Example (201) illustrates the generally accepted paradigm, in which CENs are unique in licensing infinitival purpose clause adjuncts within the nominal.

- (201)a. The examination of the patient (in order to better understand the rare disease) took three hours. CEN
- b. The examination (*in order to better understand the rare disease) took three hours. SEN
- c. The examination (*in order to better understand the rare disease) was photocopied in green ink. RN

However, as shown in (202), it is entirely possible to construct examples in which a compositionally derived nominalisation may license a purpose clause without projecting an internal argument. Crucially, as with CEN constructions, the interpretation of the purpose clause adjunct is tied to the goals of the nominal event, rather than to the verbal event of the matrix clause. For example, *to renovate the old Parson’s estate* in (202a) denotes the intentions of some subject relative to the *construction* event, and not to the *bothering* event.

- (202)a. The ongoing construction next door (in order to renovate the old Parson’s estate) is bothering me.
- b. Years of deliberate humiliation (in order to punish him for an extra marital affair) are at the root of Howard's commitment issues.

Furthermore, infinitival purpose clause adjuncts of the type in (202) are not generally available within the nominal system. As we see in (203), event-denotation is not enough to license implicit argument control. Note, the nominals below are those same nominals which were observed to license event and agent-oriented modification in section 4.3.1.

- (203) a. Mary's deliberate mistake (*in order to take the company down) backfired.
 b. Bill's frequent infidelity (*in order to sabotage his marriage) is a major issue.

In sum, SEN constructions that are overtly compositional pattern together with CENs regarding the nature of potential *by*-phrase adjuncts, as well as in their ability to license implicit argument control. Furthermore, the interpretation of any prenominal genitive argument appearing in compositional SENs is systematically predictable from the semantic class of the underlying predicate.

4.3.3. A new take on aktionsart in the nominal domain

At first glance, the distribution of (telic) aktionsart modifiers within the nominal domain *does* seem to isolate CENs from all other nominal types. As we see in (204), these modifiers are only licensed in the presence of a realised internal argument within the nominalisation (Grimshaw 1990).

- | | | |
|----------|--|-----|
| (204) a. | The examination of the patient (in five minutes) ... | CEN |
| b. | The examination (*in five minutes) occurred at 10:00. | SEN |
| c. | The examination (*in five minutes) was photocopied ... | RN |

While the judgements in (204) are clear and uncontroversial, it is unclear what these judgements reveal about the internal composition of the nominalisations in question. Recent research into telicity (cf. Kratzer 2004; Ramchand 2008; Travis 2010) keys telic aktionsart modification to the presence or absence of *culmination* in the event in question. For many verbal predicates, the presence of an internal argument is a necessary condition for measuring out the event, and subsequently in valuing its telicity (see Tenny 1987, 1994). Predicates such as *examine* and *interpret* in examples (205a,b) are cases in point. Critically, without the internal argument, the event in question cannot achieve culmination, and as such telic aktionsart modification becomes unacceptable. We illustrate this latter observation with the generic constructions in (205c,d).

- (205) a. The doctor examined the patient (in five minutes).
- b. The students interpreted the poem (in three hours).
- c. Doctors often examine (*in five minutes).
- d. Students often interpret (*in three hours).

Despite the observation that *examine* and *interpret* in (205c,d) do not license aktionsart modifiers, it would be negligent to assume outright that the verb *examine* in its active instantiation is compositionally distinct from the verb *examine* in its generic instantiation. Rather, the most natural route would be to link the variation in telicity to the variation in the syntactic environment in which the verb appears. Consider now the examples in (206); these nominalisations pattern uniformly with their verbal counterparts in (205) regarding telicity. The simplest account of these observations attributes the incompatibility of telic aktionsart modification in (205c,d) and (206c,d) to the same underlying cause: the lack of culmination in their predicative expressions.

- (206) a. The doctor's examination of the patient (in five minutes).
- b. The students' interpretation of the poem (in three hours).
- c. The doctor's examination (*in five minutes).
- d. The students' interpretation (*in three hours).

In fact, rather than supporting the view that CENs and SENs are distinguished by the presence/absence of an encoded event/event structure, the combined pattern in (205) and (206) can be most elegantly captured from the perspective that both CENs and SENs are compositionally derived from the same structured event. That is, the aktionsart-related properties of the nominalisation mirror those of the corresponding verbal predicate in both argument-projecting and argument-omitting contexts. Furthermore, there is no way to capture this pattern if SENs are always underlyingly referential; the pattern above would have to be analysed as coincidental.

The hypothesis that telic aktionsart modification is tied to culmination rather than to some distinctly verbal syntactic frame predicts that telic aktionsart modification will also be licensed in SENs derived from predicates that are specified for culmination inherently. The verb *ascend* appears to be such a predicate, in that telic aktionsart modifiers are licensed in both transitive and intransitive/generic constructions.

- (207) a. The group ascended the mountain (in three weeks).
b. The group ascended (in three weeks).
c. This group often ascends (in three weeks).

Predictably, this wider availability of telic aktionsart modification in the verbal domain is mirrored in the nominal domain: both argument-projecting and argument-omitting instantiations of *ascent* may take a telic aktionsart modifier, as illustrated in (208).

- (208) a. The group's ascent of the mountain (in three weeks) ...
b. The group's ascent (in three weeks) ...

Of course, the observations in (207) and (208) are equally amenable to an AS-centric account, given that *ascend* is underlyingly intransitive and thus appears in an intransitive syntactic frame. Thus, the AS-centric account would consider both of the nominalisations in (208) to be CENs: the CEN in (208a) involves an optional (applicative) verbal argument, while the CEN in (208b) is derived from the base intransitive argument structure of the verb *ascend*. Unfortunately, this strategy fails to account for the nominal constructions in (209), which involve the apparent licensing of telic aktionsart modifiers by nominals derived from arguably transitive verbs.

- (209) a. The burglar's entry (in a matter of seconds) took the home-owner by surprise.
b. This contestant's domination (in a matter of seconds) left every other participant demoralised.

Unlike telic aktionsart modifiers, atelicity is not generally assumed to be tied to any one argument of the event in question. For example, Kratzer (2004) suggests that 'true' atelicity is borne by the atelic verb stem.¹⁶ Abstracting away from any one particular analysis of atelicity and atelic durative modifiers, the examples in (210) suggest that atelic aktionsart modification may in fact be more generally available to compositionally derived SENs than Grimshaw (1990) would lead one to believe.

¹⁶ For Kratzer, the telic interpretation is borne by virtue of the verb stem merging with an accusative case-checking verbal functional head; atelic verb stems are altogether incompatible with this functional projection and must find alternative methods to check the structural case of any direct objects.

- (210) a. Observation for three to six weeks is standard procedure for any post-op patients.
- b. This investigation for three long months has been nothing short of a disaster.

While integral to our understanding of derivational nominalisation, atelic aktionsart modification within the nominal domain will not receive a formal analysis within this dissertation. However, we will provide in section 4.4 an account of the puzzle presented by telic aktionsart modification in this section (see examples (205-209)), and will seek to provide a foundation upon which a full characterisation of atelic/durative modifiers in the nominal domain may be formalised.

4.3.4. Summary

Over the course of this chapter, we have employed the terminology 'compositionally derived' to describe SENs that are overtly derived from some verbal base (e.g., *observation* from *observe*). This term is meant to contrast with those SENs that may refer to events of some sort, but arguably have no predicative verbal base (i.e., *event*, *trip*, etc.). Recall that it is the view of the AS-centric approach to nominalisation that, in non-argument-projecting contexts, SENs are no different than RNs or otherwise canonical referential nouns regardless of their underlying root or internal composition. In the case of (Borer 2003, *et seq.*), compositionally derived SENs, non-compositional SENs and referential RNs all belong to the R-nominal category.

However, in the above sections we have seen some evidence to suggest that Borer's R-nominal category – and indeed Grimshaw's (1990) category of SEN – may require a more fine-grained approach. Consider the table in (211), which summarises our findings from section 4.3.1-4.3.3. Note that, while some of the diagnostics remain unchanged from Grimshaw's original typology, a number of tests have been explicitly reformed. First, we have altered the *subjects as arguments* diagnostic, based on the wide distribution of agent-oriented modifiers in the nominal domain. We instead found that the interpretation of the prenominal subject in both SEN and CEN constructions is predictable from the semantic class of the underlying predicate. Furthermore, we found that SENs and CENs both systematically mirror their verbal counterpart in their (in)ability to license telic aktionsart modifiers, given varying culmination conditions.

(211)	<i>Coerced DPs</i>	SENs	CENs
a. Event modification	✓	✓	✓
b. Agent-oriented modification	✓	✓	✓
c. Predictable prenominal interpretative effects		✓	✓
d. <i>by</i> -phrase adjuncts express agency		✓	✓
e. Compatibility with purpose clause adjuncts		✓	✓
f. Aktionsart predictable from verbal base		✓	✓

There is, of course, a glaring issue with this characterisation of nominal types: the label *SEN* in the table above is far too broad. According to Grimshaw's (1990) typology and much subsequent work, SENs encompass not only event-denoting compositional nominalisations such as *examination* and *inspection*, but also non-derived NPs that refer to events, such as *event* and *trip*. However, we have only considered the former type of nominal in the above sections. When we examine the behaviour of non-derived event-denoting NPs, we find that in all cases they act like our 'coerced DPs' category. That is, they will license the event and agent-oriented modification that we find generally throughout the English nominal system, but do not successfully participate in rest of the diagnostics. For example, in (212) we see that the nominal *event* may take an event modifier (as in (212a)) or an agent-oriented modifier (212b) but is incompatible with a purpose clause adjunct (212c). Furthermore, the interpretation of the genitive subject *Sarah* in (213a) is not predictable; the prenominal subject may refer to an event orchestrator, attendee, observer, or a range of other interpretations (see (213b-d)).

- (212) a. The frequent event will start a bit late this week.
 b. Breaking plates at a Greek wedding is a deliberate and satisfying event.
 c. This event (*in order to break some plates) is never going to work.

- (213) a. Sarah's event lasted for three hours.
 b. ⇒ Sarah orchestrated an event that lasted three hours.
 c. ⇒ Sarah attended an event that lasted three hours.
 d. ⇒ Sarah watched on TV an event that lasted three hours.

As such, we provide the amended table in (214), which now distinguishes between those nominalisations that are *composed* from events (SEN_{COMP}) and those nominalisations which

simply *refer* to events, without any underlying verbal base (SEN_{REF}). Immediately, we find that compositionality defines two distinct natural classes of event-nominalisation.

(214)	<i>Non-compositional</i>		<i>Compositional</i>	
	<i>Coerced DPs</i>	SEN_{REF}	SEN_{COMP}	CENs
a. Event modification	✓	✓	✓	✓
b. Agent-oriented modification	✓	✓	✓	✓
c. Predictable prenominal interpretative effects			✓	✓
d. <i>by</i> -phrase adjuncts express agency			✓	✓
e. Compatibility with purpose clause adjuncts			✓	✓
f. Aktionsart predictable from verbal base			✓	✓

Note that we have thus far avoided discussing the *obligatory internal arguments* diagnostic from our characterisation. In fact, given the empirical summary in (214), it is the case that the only thing distinguishing CENs from SEN_{COMP} is the notion that the former obligatorily take an internal argument. However, the obligatory nature of this internal argument is tied to the disambiguating nature of Grimshaw's suite of diagnostics; without a hard empirical divide between CENs and SEN_{COMP} , there is little motivation for a type of de-verbal nominalisation that obligatorily projects its argument structure. Instead, if we collapse our event nominal categories into either *non-compositional* or *compositional* as in (215), we may restate the CEN/SEN distinction as a matter of argument optionality (see (215g)).

(215)	<i>Non-compositional event</i>	<i>Compositional event</i>
	<i>NP</i>	<i>nominalisation</i>
a. Event modification	✓	✓
b. Agent-oriented modification	✓	✓
c. Predictable prenominal interpretative effects		✓
d. <i>by</i> -phrase adjuncts express agency		✓
e. Compatibility with purpose clause adjuncts		✓
f. Aktionsart predictable from verbal base		✓
g. Event arguments optional		✓

This notion of argument optionality in the nominal domain is in line with recent proposals by Vinokurova (2005) and Reuland (2011), who observe the systematic optionality of arguments in event nominalisations in a number of languages. Likewise, the paradigm above is entirely in line with the recent corpora studies of (Grimm and McNally 2013, 2015), which find no empirical evidence for a distinction between CEN and SEN. In section 4.4 we will attempt to formulate a formal analysis of English event nominalisation which captures the generalisations in (215), based on work by Adger (2012).

4.3.5. A note on compositionality

Before moving on, it will be useful to define *compositionality* as it applies to event-denoting nominalisations. For our purposes, we will follow the notions of compositional meaning/content laid out in (Borer 2014; see also Marantz 2001). For Borer, a nominal may be considered compositional iff the meaning of the nominal itself may be computed from the meaning of its individual parts.¹⁷ Take, for example, the event nominalisation *transformation*, as in (216a). Here, we say that *transformation* is compositional, such that its meaning may be discerned from the semantic denotations of the verb *transform* and the

¹⁷ By *compute*, we mean that the semantic denotation of the resulting word may be incrementally recovered from the semantic denotation of each morpheme within the word. Given that we are concerned entirely with processes of de-verbal or de-adjectival nominalisation, we set aside the issue of compounds.

affix *-ation* (see (216b)).

- (216) a. The transformation of the field by the linguist ...
b. = $\llbracket -ation \rrbracket + \llbracket \sqrt{\text{TRANSFORM}} \rrbracket$

Alternatively, the RN *transformation* in (217a) cannot be defined as compositional, since its meaning may not be computed from the meaning of its parts. Instead, it refers to a particular generative operation. For Borer, these types of nominals are assigned content as a single unit.

- (217) a. The passive transformation is a hotly contested topic.
b. $* = \llbracket -ation \rrbracket + \llbracket \sqrt{\text{TRANSFORM}} \rrbracket$

Borer (2014) asserts the following generalisations regarding the availability of compositional and non-compositional meanings in nominalisations.

- (218) a. Non-compositional content → no eventuality interpretation
b. Eventuality interpretation → compositional content

Put plainly, non-compositional meanings will never yield the kind of structured event interpretation that may give way to argument projection, aktionsart modification, and the suite of grammatical behaviours summarised in section 4.3.4. Contrastively, structured events will *always* give rise to compositional meaning.

Recall now that, for Borer, any SEN construction – that is, any nominalisation without the projection of argument structure – is necessarily an R-nominal: it does not denote a structured event. Thus, SENs with compositional meaning occupy a tenuous place in Borer's framework: their meaning is compositional in nature, but they do not express a structured eventuality such that any and all event arguments are obligatorily realised. Borer notes that, given the ambiguity between AS- and R-nominal status, it is expected that nominals such as *transformation* would yield both compositional and non-compositional meanings. Furthermore, it is implied that R-nominals may alternate freely between compositional and non-compositional meanings.

It is this latter implication that presents a non-trivial problem for the claim we made in section 4.3.4 that event nominalisations are distinguished by whether or not their meaning is compositional. That is, if the R-nominal *transformation* may truly alternate

between both compositional and non-compositional meanings, then our characterisation of nominal categories is far too constrained. However, this does not seem to be the case; as illustrated in (219), the realisation of any behaviour from the *compositional* side of (215) enforces a compositional meaning of transformation. The same is true of the ambiguous nominalisations *proclamation* (see (220)) and *temptation* (221). Note that, as expected, these generalisation hold despite the lack of argument structure in the nominal.

(219) a. A transformation in order to grow the company was recommended.

b. = the act of transforming

c. ≠ the generative operation

(220) a. The constant proclamation by the reverend quickly became stale.

b. = the act of proclaiming

c. ≠ what the reverend said

(221) a. Deliberate temptation in order to discern the true believers ...

b. = the act of tempting

c. ≠ the instrument of temptation (e.g., *alcohol is a real temptation for some*)

Given these observations, our characterisation of nominal types in (215) predicts Borer's generalisations in (218) *prima facie*, without needing to rely on any stipulative rules on meaning-assignment and/or functional material within the nominal.

The final hurdle for our characterisation of event nominals comes from Grimshaw's original observations; why don't the SENs in section 4.2.1 exhibit the behaviour we have come to expect from compositionally derived event nominals? To illustrate, consider the examples in (222): the CEN licenses a purpose clause adjunct, and the RN predictably does not. However, given what we have seen in section 4.3.2, the ungrammaticality of the SEN in (222) is unexpected.

(222) a. The examination of the patient (in order to make a diagnosis) took three hours. CEN

b. The examination (*in order to make a diagnosis) took three hours. SEN

c. The examination (*in order to make a diagnosis) was photocopied in green ink. RN

We would like to suggest that the perceived ungrammaticality of (222b) is linked to the distinction between episodic and generic interpretations. Consider, for example, the pattern in (223) involving the verb *read*. When this predicate occurs in its transitive episodic aspect, it may realise an infinitival purpose clause adjunct (as in (223a)). In contrast, in the predicate's *intransitive* episodic instantiation, the realisation of a purpose clause adjunct causes severe degradation (see (223b)). Crucially, we see in (223c) that the purpose clause adjunct becomes perfectly grammatical in the intransitive environment, so long as the utterance gives rise to a generic interpretation.

- (223) a. Yesterday, John read a book (in order to diagnose his patient).
 b. Yesterday, John read (??/*in order to diagnose his patient).
 c. John often reads (in order to diagnose his patients).

We propose that the episodic/generic distinction in the verbal domain has a direct analogue in the nominal domain in the form of the mass/count distinction, which is itself conditioned by the (in)definiteness of the derived noun (cf. Harley 2009). We note first that the ungrammatical SEN in (222b) includes the definite determiner, which enforces a mass reading of the nominal. If mass-denotation is akin to episodic interpretation, then the infelicity of a purpose clause adjunct is expected in the absence of an internal argument (see intransitive *read* in (223b)). In contrast, any compositionally derived event nominalisation selected by an indefinite determiner will constitute a count-noun, which is (by hypothesis) the nominal counterpart to a generic VP. As such, given the availability of a purpose clause in (223c), we predict that indefinite SENs will be similarly compatible with infinitival purpose clause adjuncts. This prediction is borne out in (224).

- (224) a. An examination of the patient (in order to make a diagnosis) is highly recommended. CEN
 b. An examination (in order to make a diagnosis) is highly recommended. SEN
 c. An examination (*in order to make a diagnosis) will be photocopied in green ink. RN

A similar suggestion is made by Harley (2009), who suggests that the mass/count distinction may be the underlying condition which determines whether an argument is

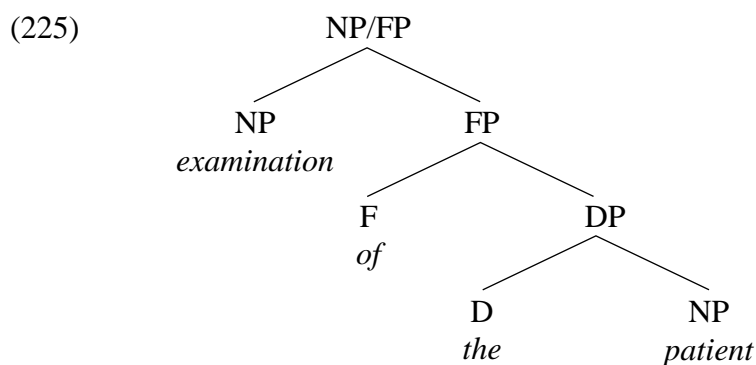
obligatory or not in a derived nominal. Furthermore, it may be possible to formally establish some semantic uniformity between the episodic/generic distinction and the mass/count distinction from the perspective of the mereological distinction between *divisive* and *quantised reference* (cf. Champollion and Krifka 2016). For expository reasons, we put (in)definiteness and its contribution to nominal argument structure aside for future research.

4.4. An event-based analysis of English nominalisation

Having motivated an E-centric perspective of English de-verbal nominalisation, this section will provide an analysis along the lines of Adger (2012). In section 4.4.1 we will analyse the syntax of event nominalisations, assuming the optionality of nominal arguments discussed in section 4.3.4, as well as a number of independent grammatical properties. Then in section 4.4.2 we will provide a compositional semantics for English event nominalisations. Finally, in section 4.4.3 we return to the diagnostics discussed in 4.3 in order to make explicit their syntactic/semantic interactions with our event nominalisations.

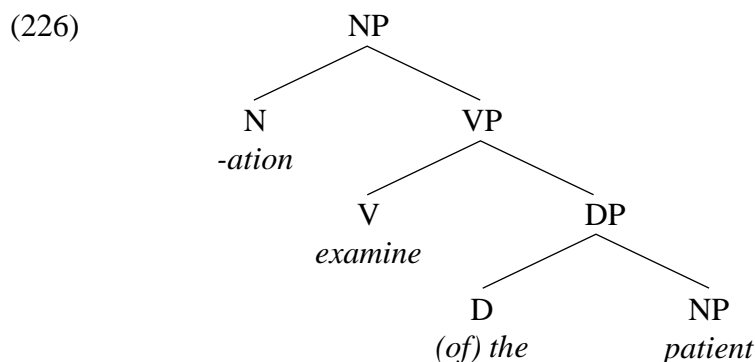
4.4.1. The syntax of nominalisation

For our analysis of English event nominalisation, we follow Adger (2012) in assuming that nouns are never relational, and as such that any arguments within the nominal must be introduced by relational functional structure. To this end, we take the structure in (225) as our starting point, which includes some functional projection FP that introduces the nominal's *of*-argument.



The structure in (225) is markedly different to the general structure assumed in the AS-centric literature on nominalisation. Most blatantly, while the AS-centric approach assumes

an obligatory argument-predicate relation comparable to that of the verbal domain, the structure in (225) constitutes either (i) an adjunction construction, or (ii) an applicative construction in which the nominalisation appears as the specifier of the relational projection FP. We provide a toy AS-centric analysis of nominalisation in (226) in order to draw explicit comparisons.



We argue that a number of crucial observations motivate the structure in (225) over the verbal structure in (226), including (i) the loss of idiosyncratic expression in nominal *of*-arguments, (ii) the incompatibility between *of*-arguments and depictive secondary predicates, and (iii) the interpretative effects of coordination of nominal *of*-arguments.

Beginning with (i), we observe in (227) that verbs and their internal arguments may yield a variety of idiosyncratic interpretations that vary wildly from each other, with no apparent systematicity (Marantz 1984).

- (227) a. John killed a man.
 b. John killed the audience.
 c. John killed the conversation.
 d. John killed his drink.

It is observed by Punske (2012) that nominal gerunds do not share this idiosyncratic behaviour with their verbal counterparts. For example, while the verbal structure in (228) is ambiguous between a literal and idiosyncratic reading, only the literal interpretation is available to the nominal gerund construction in (229) (cf. Punske 2012:54-55).

- (228) a. John killed the audience.
 b. ⇒ John is a mass murderer.
 c. ⇒ John is a talented comedian.

- (229) a. John's killing of the audience led to an eventual sitcom.
 b. \Rightarrow John is a mass murderer, and they made a sitcom about his dark exploits.
 c. \nRightarrow John is a talented comedian, and he landed a gig on a sitcom.

On the assumption that this kind of idiosyncratic meaning is borne from the close syntactic/semantic relationship between a verb and its internal argument, it follows that the same idiosyncratic relation does not occur in non-object relations (cf. Kratzer 1996 concerning subject-verb relations). Given the contrast between (228) and (229), Punske argues that the *of*-arguments in nominal gerundive constructions are not 'true' internal arguments, but rather adjunct PPs.

We contend that this same phenomenon occurs in compositionally derived nominalisations as well. That is, *contra* Punske 2012, derived nominalisations also block all idiosyncratic interpretations of their *of*-argument that are otherwise available between the corresponding verb and its internal argument.¹⁸ For example, consider the verbal and nominal constructions in (230-232), involving *murder*, *adoption*, and *creation*.¹⁹ We find that, in the verbal domain, the predicates are all compatible with idiosyncratic arguments/interpretations. However, those same interpretations are barred in the nominal domain.

- (230) a. John murdered his stepfather.
 b. John's murder of his stepfather ...
 c. John murdered that hamburger.
 d. *John's murder of that hamburger ...
- (231) a. Mary adopted a child.
 b. Mary's adoption of a child ...
 c. Mary adopted a low profile (in order to avoid detection).
 d. *Mary's adoption of a low profile (in order to avoid detection) ...

¹⁸ Punske (2012) makes the claim that, unlike nominal gerunds, derivational nominalisations are based on the roots of verbs which do not give rise to idiosyncratic/idiomatic interpretation. We show in (230-232) that this claim is patently false.

¹⁹ While *murder* and similar event-denoting nominals show no outward signs of morphological derivation, it has been observed that they may project nominal argument structure and require a compositional analysis (cf. Harley 2009).

- (232) a. Bill created a chair.
 b. Bill's creation of a chair ...
 c. Bill created a scene/a stink/an uproar.
 d. *Bill's creation of a scene/a stink/an uproar ...

Furthermore, some verbs such as *redeem* and *suggest* are idiosyncratically compatible with inherent reflexivity; they exhibit a particular idiosyncratic meaning in the environment of a reflexive anaphoric direct object. In (233-234) we see that these reflexive interpretations, much like the idiosyncratic interpretations in (230-232) above, disappear when the predicates undergo the nominalisation process.

- (233) a. John redeemed the movie voucher.
 b. John's redemption of the movie voucher ...
 c. John redeemed himself.
 d. *John's redemption of himself ...

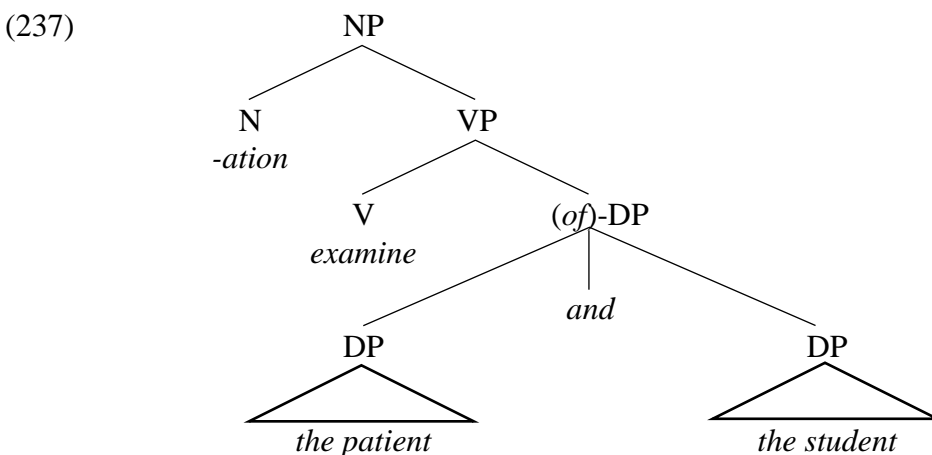
- (234) a. John suggested a new idea.
 b. John's suggestion of a new idea ...
 c. The idea (practically) suggested itself.
 d. *The idea's (practical) suggestion of itself ...

Moving on to (ii), we note that while depictive secondary predicates are compatible with direct objects within the VP, they are incompatible with DPs inside PPs, as well as DPs in indirect object/applicative contexts (cf. Williams 1980; Baker 1997; Pylkkänen 2002, 2008). Thus, the potential nominal structures in (225) and (226) make different predictions regarding the realisation of secondary depictive predicates within the nominal domain. Namely, the AS-centric approach in (226) predicts that depictives will be generally available, given the verb-complement relation instantiated by argument-projecting nominalisations. Conversely, our novel structure in (225) predicts that depictives will be incompatible with the *of*-argument, assuming that FP is either a prepositional adjunct or a relational applicative projection. As illustrated in (235-236), depictive secondary predicates may not be predicated of the nominal *of*-argument, providing further support for our non-VP structure.

- (235) a. *John examined the patient drunk.*
 b. *John examined the patient drunk.*
 c. *John's examination of the patient drunk ...*
 d. **John's examination of the patient drunk ...*

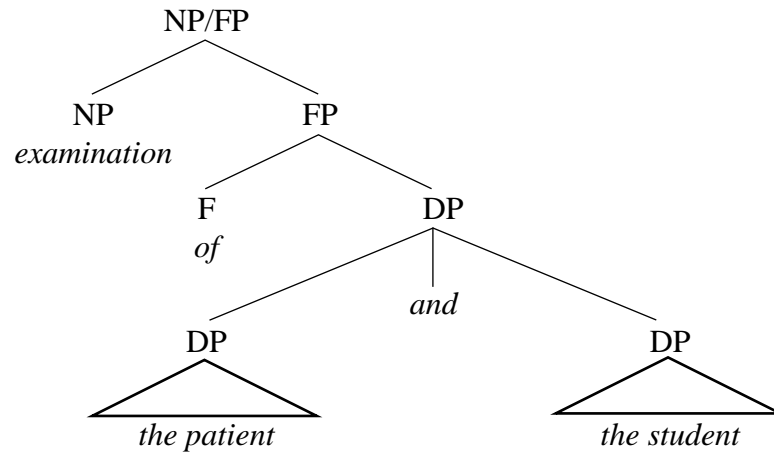
- (236) a. *John inspected the meat hungry.*
 b. *John inspected the meat raw.*
 c. *John's inspection of the meat hungry ...*
 d. **John's inspection of the meat raw ...*

Finally, the novel structure in (225) and the AS-centric structure in (226) make different predictions regarding the possible coordination constructions available inside the nominalisation. According to the AS-centric approach, *of* is considered an overt spell-out of structural case within the NP, and therefore does not constitute its own functional layer. Contrastively, in (225) *of* occupies some functional head F and takes as its complement the DP argument. Thus, while the AS-centric approach predicts a singular location for argument coordination in the nominalisation (namely at DP), our novel analysis predicts two, DP and FP, as illustrated in (237) and (238) below. Note that we assume in (237) the ‘Last Resort’ hypothesis of Harley (2009) such that *of* is inserted as a post-syntactic disassociated morpheme, in order to satisfy a relevant well-formedness condition on nominal construction.²⁰

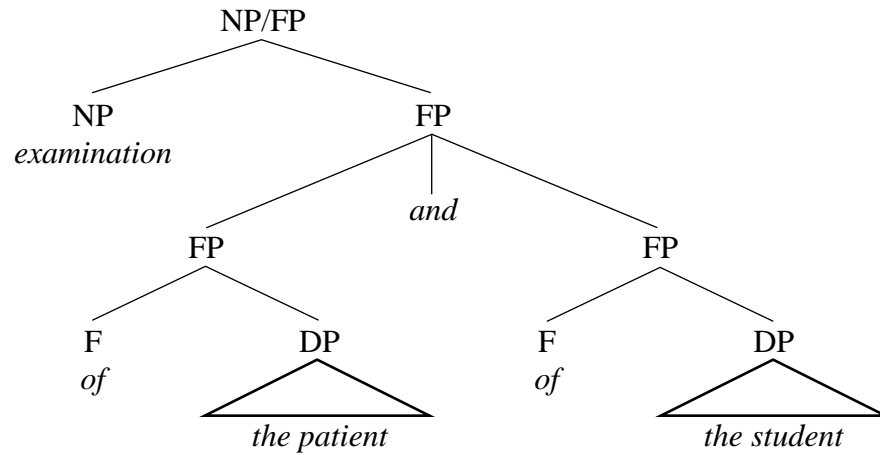


²⁰ See (Punske 2012) for the hypothesis that *of* undergoes P-incorporation into the predicative head of the derived nominalisation.

(238) a.



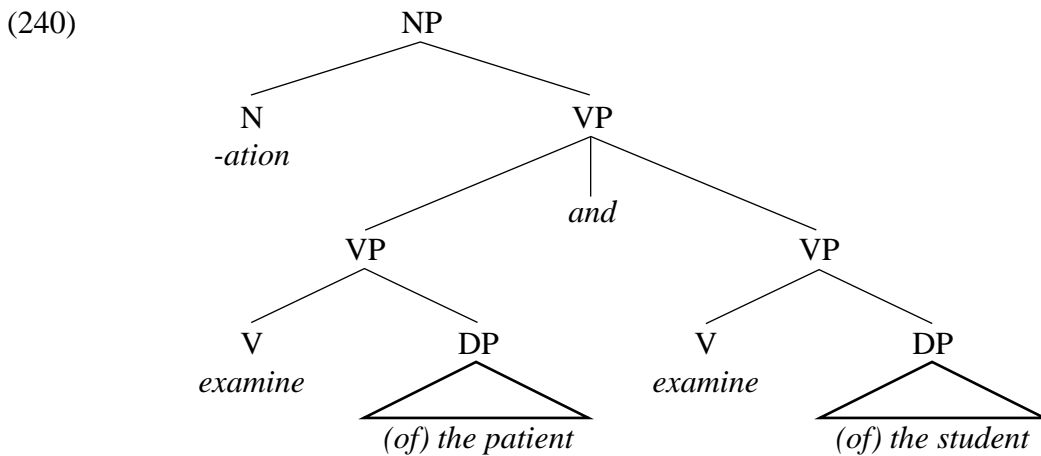
b.



We observe in (239a,b) below that both structures in (238) are available in English. This observation does not *prima facie* rule out a VP analysis of event nominalisations, however; a proponent of the AS-centric view could conceivably employ a kind of gapping mechanism within the nominal derivation. Assuming gapping to be an instantiation of ‘low’ ν P or VP coordination (in the sense of (Johnson 2009)), a structure such as that in (240) is one possible representation of coordination that seems to target nominal *of*. Note that, in this case, it is necessary to posit across-the-board head movement of the two verbs *examine* to the single nominal functional head.

(239) a. The barbarians’ destruction of Rome and Pompeii.

b. The barbarians’ destruction of Rome and of Pompeii.



However, the structure in (240) predicts that the complements within the conjoined VPs will only be constrained by the corresponding complementation possibilities observed in the verbal domain. For example, we note that many predicates are compatible with both DP and CP complements, such as *suggestion* and *explanation*. As we see in (241), such predicates permit coordination of non-matching complement types (e.g., DP and CP). Thus, if coordination of nominal *of*-arguments is in fact VP coordination plus gapping, we should expect that one conjunct may realise an *of*-marked DP while the other realises a CP. This is not the case; we see in (242) that coordination of an *of*-marked DP object with a *that*-clause CP results in a highly marked/ungrammatical utterance.

- (241) a. John suggested a new idea, and that Frank should be fired.
 b. Mary explained the problem, and that there wasn't much time left.

- (242) a. ?John's suggestion of a new idea and that Frank should be fired ...
 b. *Mary's explanation of the problem and that there wasn't much time left ...

Before moving on, we should consider the case of adverbial modification within the noun phrase. As discussed in Fu, Roeper, and Borer 2001, argument-projecting event nominalisations may license adverbial VP modifiers within the NP, as in (243) (see also chapter 3). While some of the examples in (243) are marked, there is a clear contrast between them and the sentential modifiers in (244). The authors argue that this pattern motivates an analysis of compositionally derived nominals, such that they include a functional VP layer, but not a TP (where sentential adverbials are assumed to adjoin). If this pattern does indeed hold, then it poses a non-trivial problem for the distinctly nominal analysis of event nominalisation pursued here.

- (243) a. ?His explanation of the problem *thoroughly* to the tenants ...
 b. ?Protection of children *completely* from bad influence ...
 c. Jane's resignation *so suddenly* ...
 d. His transformation into a werewolf *so rapidly* ...

- (244) a. *His explanation of the problem *presumably* to the tenants ...
 b. *Protection of children *unfortunately* from bad influence ...

However, aside from the fact that the judgements in (243) have been contested, there are a number of issues with the nature of these adverbial modifiers. First, we note that the results of the adverbial modification diagnostics discussed in Fu, Roeper, and Borer (2001) are confounded by the inclusion of *so* in many of the examples. As we see in (245), adverbial phrases beginning with *so* are markedly better than bare adverbials in non-compositional, non-argument-projecting NP contexts.

- (245) a. ?John's business trip *so suddenly* (made his wife suspicious).
 b. *John's business trip *suddenly* (made his wife suspicious).
 c. ?Mary's mistake *so deliberately* (may have bankrupted the company).
 d. *Mary's mistake *deliberately* (may have bankrupted the company).
 e. Bill's infidelity *so continuously* (will certainly cost him his marriage).
 f. *Bill's infidelity *continuously* (will certainly cost him his marriage).

Furthermore, to the extent that bare adverbial modifiers are acceptable in the nominal domain, they are acceptable with all compositional event nominals regardless of argument status. As illustrated in (246), it is possible to construct examples in which a bare adverbial modifier may appear with a non-argument-projecting event nominalisation. While these examples are far from perfect, they do show the necessary contrast with the sentential modifiers in (247).

- (246) a. ?Demonstration *thoroughly* in order to promote workplace safety ...
 b. ?The examination *completely* by Dr. Wilcox ...
 c. ?The criminal's evasion *expertly* ...
 d. ?Transformation *rapidly* should be avoided...

- (247) a. *Demonstration *presumably* in order to promote workplace safety ...
 b. *Transformation *unfortunately* should be avoided ...

As such, any account of potential adverbial modification in the nominal domain must acknowledge that the role of argument structure to the distribution of adverbial modifiers is minimal.

This concludes the introduction and motivation of a non-verbal syntax for argument-projecting event nominalisations. In the following section, we will formalise how these pieces of syntax compose semantically and will show that the uniform behaviour of all compositional event nominalisations is systematically predictable.

4.4.2. Composing meaning in the nominal domain

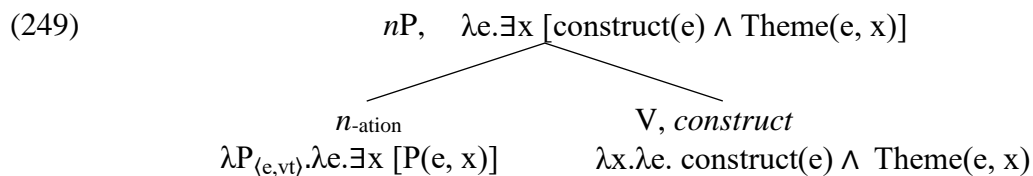
Having determined an appropriate syntactic structure for event nominalisations in section 4.4.1, we turn now to matters of semantic composition. To that end, we note two separate aspects of event nominalisation that require an adequate explanation: (i) the compositionally eventive nature of the N^0 , and (ii) the relational nature of FP.

We take as our starting point the generalisation given in Borer (2014) concerning the requisite that any complex event nominal (AS-nominal) must embed an attested, *bona fide* verbal predicate. For Borer, this only applies to event nominalisations bearing argument structure, but we may extend this generalisation to all compositional event nominalisations regardless of argument-bearing properties. We furthermore adopt Moulton's (2014) denotation of the nominalising affix, given in (248). Note that, for Moulton, this is but one of three ambiguous varieties of nominal affixes available in the nominal system. We will attempt to generalise it across all types of compositional event nominals.

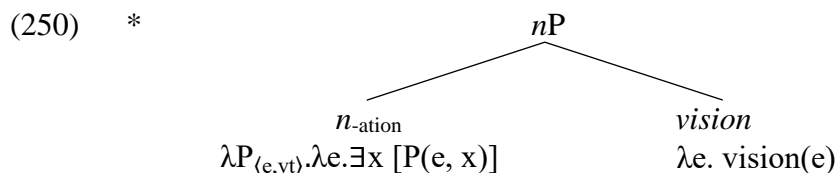
$$(248) \quad \llbracket n\text{-ation} \rrbracket = \lambda P_{\langle e, vt \rangle}. \lambda e. \exists x [P(e) \wedge \text{Theme}(e, x)]$$

The nominal affix in (248) is a function from properties of individuals to properties of events (semantic type $\langle e, vt \rangle$, $\langle v, t \rangle$). Thus, when combined with a transitive verbal predicate such as *construct*, the affix will return the set of all *construct* events, and the internal argument will be made implicit by virtue of existential closure. To illustrate, we provide a preliminary derivation of the compositional event nominal *construction* in (249) below. Note, we abstract away from the notion of category-neutral roots; *construct* is inserted into

the derivation as a verb, thus trivially satisfying Borer’s generalisation that compositional event nominals embed attested verbs. This analysis is compatible with a framework employing category-neutral roots, on the assumption that roots are mere phonological indices.



In fact, the generalisation that a compositional event nominal must embed an attested verb is entirely explained by the nature of the nominal affix. That is, while non-verbal event-denoting nominals such as *vision* or *metamorphosis* may arguably encode an event variable in the Davidsonian sense (though that will not be our analysis of such NPs), there is no sense in which they are relational; they do not encode an argument variable. Thus, composition between the nominal affix in (248) and a non-verbal event predicate results in a type mismatch, as illustrated in (250): the nominal element *n* expects a predicate of type $\langle e, vt \rangle$ but instead receives a predicate of type $\langle v, t \rangle$.



Assigning the nominal affix the semantic denotation in (248) also provides some purchase on the question of why the vast majority of derived compositional event nominals come from transitive or unaccusative base predicates. While event nominalisations like *ascent* and *descent* are arguably unergative, they are generally analysed as entailing a scalar change-of-state of their subjects, thereby perhaps making them more amenable to an unaccusative analysis (for related discussion, cf. Beavers and Koontz-Garboden 2012, 2015; Levin and Rappaport Hovav 2013). Likewise, while nominal gerunds (i.e., *dancing*, *climbing*, *crying*, *grumbling*) may be productively built from unergative roots, they are often assumed to require a separate analysis from derived nominalisations (cf. Punske 2012), and therefore do not inform our analysis.

In fact, only a handful of predicates present potential counter-examples to our analysis of the nominal affix, including those listed in (Harley 2009, ex. 15) as well as the

involuntary bodily function nominals *urination* and *defecation*. The fact that the underlying verbal predicates *urinate* and *defecate* are obligatorily intransitive presents a non-trivial problem to our denotation of *n* in (248). That is, the semantic denotation of these predicates is presumably incompatible with the nominal affix for the same reason that *vision* was incompatible in example (250); there is no internal argument for the existential quantifier to bind. However, although these nominals have the outward appearance of compositional event nominals, we observe in (251) that they exhibit none of the defining correlative properties.

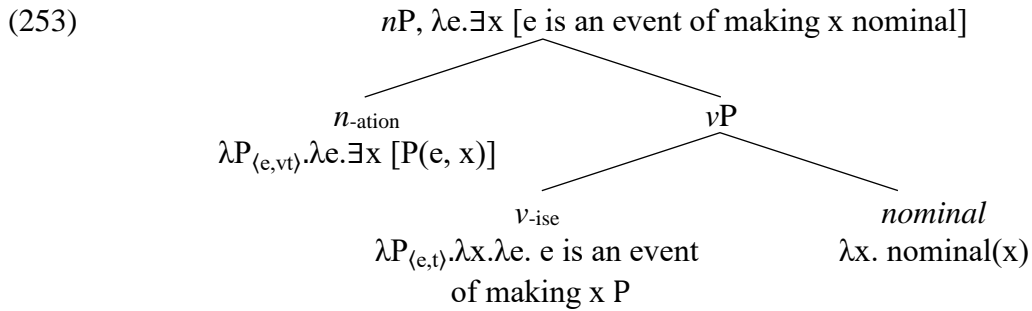
- (251) a. John defecated in order to play a prank on his boss.
 b. *John's defecation in order to play a prank on his boss ...
 c. Bill urinated for a very long time.
 d. *Bill's urination for a very long time ...

We therefore contend that the predicates *urinate* and *defecate*, as well as other unergatives that display complex morphology of this sort, never undergo compositional event nominalisation. However, they may presumably enter the derivation as RNs and subsequently be coerced into an event interpretation. Before moving on, it is useful to note that the behaviour observed in (251) is equally mysterious from the AS-centric perspective, on the default assumption that unergative argument structure may feed nominal derivation.

What about more complex nominal structures, such as *nominalisation*? First, we will assume that *nominal* is itself simplex (despite obvious internal complexity) and enters the derivation as a property of individuals. We will furthermore assume (following Harley 2009) that the verbalising affix *-ise* is one possible spell-out of a polysemous verbal functional head. For our purposes, we will assign v_{-ise} the toy denotation in (252), following (Moulton 2014).

$$(252) \quad \llbracket v_{-ise} \rrbracket = \lambda P_{\langle e,t \rangle} . \lambda x . \lambda e . e \text{ is an event of making } x \text{ } P$$

Thus, the derivation of *nominalisation* will proceed as in (253): the verbal element combines with the property denoted by *nominal*, rendering a causative verbal event with a single internal argument. Subsequently, combination with the nominal affix will existentially close the internal argument position, rendering the noun a predicate of nominalising event.



While our analysis of nominal derivation shares much with Moulton (2014), our analyses diverge on the derivation of argument-bearing event nominals. For Moulton, these invoke a separate nominal affix that does not close the internal argument position; essentially, his analysis is a restatement of Grimshaw’s (1990) three-way ambiguity in the domain of functional nominal heads. Instead, we will pursue an analysis in which the nominal structures in (249) and (253) are implicated in both argument-projecting as well as argument-omitting constructions.

We therefore adopt Adger’s (2012) position that seemingly relational nouns are not, in fact, relational; any semantic relation between the noun and some argument must be mediated by functional structure.²¹ For Adger, event nominal roots are only ever predicates of events (type $\langle v, t \rangle$), and thus the relation between the event nominalisation and the *of*-argument may be mediated by a thematic functional head similar to that which one might find in the verbal domain. However, we have already invoked a thematic Theme relation within the nominal itself, and as such we will require a different strategy in order to relate the *of*-argument to the nominal event. To this end, we appeal to den Dikken’s (2006) proposal that *of* is a spell out of the nominal copula, and assign it a specificational semantics, such that its nominal argument specifies the Theme of some event. We thus re-define the functional projection F from section 4.4.1 as the nominal applicative head AppI_{NOM} in the spirit of Pylkkänen (2002, 2008), and provide its denotation in (254).

$$(254) \quad \llbracket \text{AppI}_{\text{NOM}} \rrbracket = \lambda y. \lambda e. \exists x [\text{Theme}(e, x) \wedge x = y]$$

We assume the denotation in (255) for the definite determiner, as well as the definition of predicate modification in (256) (Heim and Kratzer 1998). We provide a prototypical composition between an event nominalisation and the specificational applicative projection in example (257). In this case, the $\text{AppI}_{\text{NOM}}P$ comes to denote the set of *construction* events with some object x , and x is specified as *the building*.

²¹ See den Dikken (2006) for a related analysis concerning pseudo-partitive constructions.

$$(255) \quad \llbracket \text{the} \rrbracket = \lambda P_{\langle e,t \rangle} : \exists! x [P(x)]. \iota x [P(x)]$$

(256) If α is a branching node with daughters $\{ \beta \gamma \}$, and $\llbracket \beta \rrbracket, \llbracket \gamma \rrbracket \in D_{\langle v,t \rangle}$ (viz. are both predicate of events), then $\llbracket \alpha \rrbracket = \lambda x. \llbracket \beta \rrbracket(x) \wedge \llbracket \gamma \rrbracket(x)$.

$$(257) \quad \begin{array}{c} \text{Appl}_{\text{NOM}P}, \lambda e. \exists x [\text{construct}(e) \wedge \text{Theme}(e, x) \wedge x = \iota y [\text{building}(y)]] \\ \swarrow \quad \searrow \\ nP \quad \text{Appl}_{\text{NOM}'} \\ \lambda e. \exists x [\text{construct}(e) \wedge \text{Theme}(e, x)] \\ \swarrow \quad \searrow \\ \text{Appl}_{\text{NOM}} \quad \text{DP} \\ \lambda y. \lambda e. \exists x [\text{Theme}(e, x) \wedge x = y] \quad \iota y [\text{building}(y)] \end{array}$$

The effect of (257) is such that *the building* does not come to denote the *bona fide* internal argument of the nominal predicate. That is, *the building* never saturates a thematic argument position. Given our observations in section 4.4.1, this outcome is desirable; the *of*-argument and its nominal do not share the same thematic/idiosyncratic relationship that a direct object and its verb do (see in particular examples (230)-(234)). Under our analysis, the lack of idiosyncrasy is expected in the nominal domain, due to the increased degree of separation between the nominal and the *of*-DP.

However, despite this increased separation, the resulting complex nominalisation is truth-conditionally equivalent to a construction in which the *of*-DP saturates a thematic position. That is, the event predicate denoted by $\text{Appl}_{\text{NOM}P}$ in (257) above can only truthfully apply to an event iff the Theme of that event is *the building*. Thus, the *of*-DP is obligatorily interpreted as the internal argument of the event nominalisation; this will provide some purchase on understanding the nature of aktionsart and culmination in event nominal constructions in the following section. Thus, assuming an eventive definite determiner as in (258)²², the semantics in (259) constitutes the complete denotation of the nominalisation *the construction of the building*. Specifically, the DP comes to denote the unique event of constructing some x , such that x is *the building*.

$$(258) \quad \llbracket \text{the}_{\text{eventive}} \rrbracket = \lambda P_{\langle v,t \rangle} : \exists! e [P(e)]. \iota e [P(e)]$$

²² This sort of eventive *the* is implicated in (Bruening 2013; Moulton 2014).

$$(259) \quad \llbracket \text{the construction of the building} \rrbracket = \iota e. \exists x [\text{construct}(e) \wedge \text{Theme}(e, x) \wedge x = \iota y [\text{building}(y)]]$$

Following on from our syntactic analysis of nominalisation in 4.4.1, we have given in this section a rough semantic outline of compositional event nominalisation that crucially does not rely on verbal structure. We have seen that the compositional interpretation is borne out of the nominal derivation independently of the projection of argument structure (namely by merge with a nominal functional affix). Furthermore, we have considered one method of allowing compositional event nominals to realise an argument without relying on verbal functional structure. In this case, we appealed to the applicative head Appl_{NOM} , which takes a DP as its complement and relates it specificationally to the event nominalisation in its specifier. In the next section we will see how this analysis plays out regarding our diagnostic observations from section 4.3.

4.4.3. The diagnostics in focus

In this section we show that the diagnostic behaviour of compositional event nominalisations as outlined in the table in (260) follows naturally from our analysis in sections 4.4.1, 4.4.2. Given our proposal concerning the applicative nature of nominal *of*-arguments, we may trivially put (260g) aside.

(260)	<i>Non-compositional event NP</i>	<i>Compositional event nominalisation</i>
a. Event modification	✓	✓
b. Agent-oriented modification	✓	✓
c. Predictable prenominal interpretative effects		✓
d. <i>by</i> -phrase adjuncts express agency		✓
e. Compatibility with purpose clause adjuncts		✓
f. Aktionsart predictable from verbal base		✓
g. Event arguments optional		✓

Given that they are not isolated to compositionally derived event nominalisations, we may ignore the behaviours listed in (260a,b). Beginning with (260c), then, we note that the predictability of the prenominal genitive's interpretation is expected on our account of compositional event nominals. If we adapt Higginbotham's (1983) notion of the *R* relation to the environment of event nominalisations, we get something like the denotation in (261) for an eventive DP with a prenominal argument.

$$(261) \quad \llbracket \text{DP}_{eventive} \rrbracket = \lambda e[\text{NP}(e) \wedge R(e, x)]$$

The compositional event noun predicates the uniquely bound event variable in the usual manner, but *R* expresses an undefined relation between the event and some prenominal argument *x*. For Higginbotham, this *R* relation was contextually determined, such that in the environment of a possessive, *R* will spell out an ownership relation. It therefore follows that, in the case of compositional event nominalisations, the nature of the prenominal argument may be likewise context dependent (at least partly). For example, in chapter 2 (as well as section 4.3.4 of this chapter) we saw that the prenominal subject of event nominalisations may either be interpreted as an argument or as a possessor. We can account for this by proposing that this interpretative variability corresponds to an alternation in the spell out of the *R* predicate. Thus, in (262b) an ownership denoting *R* yields a possessor interpretation, while in (262c) an argument denoting *R* yields an argument interpretation.

- (262) a. $\llbracket \text{Congress' evacuation of the city} \rrbracket = \lambda e[\text{evacuate-the-city}(e) \wedge R(e, \text{Congress})]$
 b. If *R*=ownership, then Poss(*e*, Congress)
 c. If *R*=argument, then Agent(*e*, Congress)

However, the alternation in (262) was also observed in non-compositional event nominals (see examples (212,213) above), and therefore any variability between ownership and (perceived) argument status of the prenominal tells us little about the underlying derivation of the nominal. Instead, we found that compositional event nominals are unique in that the interpretation of any prenominal possessor – so long as an argumental interpretation is enforced – is predictable from the semantic class of the underlying verb. Recall that Smirnova (2015) distinguishes between agent-, patient- and shared-dominant nominal categories. If we utilise the notion of *prominence* (as in Grimshaw 1990), this behaviour is expected. For example, in the case of a patient-dominant nominalisation – such as *destruction* in (263) – any *R* role that instantiates an argument relation will obligatorily

realise a patient/theme, given the prominence of the patient/theme in the underlying representation of the predicate.

$$(263) \quad \llbracket \text{the barbarians' destruction} \rrbracket = \lambda e[\text{destruction}(e) \wedge R(e, \text{the-barbarians})]$$

(R=arg, barbarians=Theme)

The opposite will hold true of agent-dominant nominals such as *ascent*, such that if R realises an argument, it will realise the Agent (being the most prominent). Note that nothing we have so far proposed hinges on the concept of hierarchical prominence; a suitable analysis could conceivably make use of a speaker's encyclopaedic/real-world knowledge of a given predicate (in the sense of Marantz 1997; Harley and Noyer 1999). In this case, some kind of *frequency-of-use* effects would have to establish preference for one R interpretation over the other. We make no effort here to determine the most optimal analysis of R and its interpretation, but rather note that an underlying event variable in compositional event nominals provides a natural explanation for the recoverability of a predicate's most salient participant.

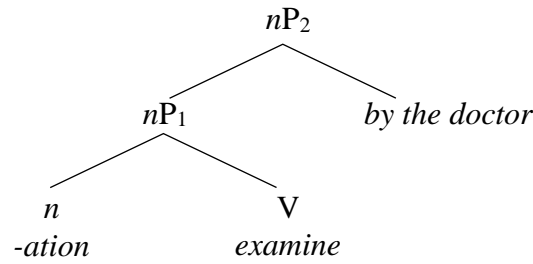
Moving on to (260d), we find that the argumental status of *by*-phrase adjuncts in the nominal domain is predictable on the assumption that *by*-phrases minimally require an open event variable (*contra* Bruening 2013). That is, we assign the preposition by_{AG} the simplistic denotation in (264); the preposition selects a nominal argument and asserts that argument as the Agent of some event e . This flavour of *by* may seemingly be contrasted with author-denoting *by*, as in (265).

$$(264) \quad \llbracket by_{AG} \rrbracket = \lambda x.\lambda e. \text{Agent}(e, x)$$

$$(265) \quad \llbracket by_{AUTH} \rrbracket = \lambda y.\lambda x. \text{Author}(x, y)$$

Agentive *by* will thus be compatible with any compositional event nominal, regardless of argument-structure. Consider the event nominalisation in (266), in which *examination* occurs without an *of*-argument. Here, by_{AG} will recover the Agent of the event variable present in the underlying derivation of the noun, as in (267).

(266)

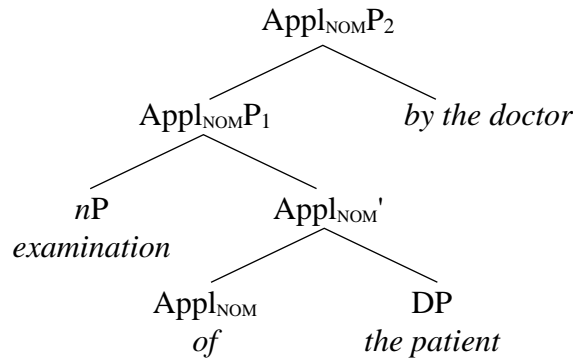


(267)a. $\llbracket nP_1 \rrbracket = \lambda e. \exists x [\text{examine}(e, x)]$

b. $\llbracket nP_2 \rrbracket = \lambda e. \exists x [\text{examine}(e, x) \wedge \text{Agent}(e, \iota y [\text{doctor}(y)])]$

The same is true of the more complex, argument-bearing event nominalisation in (268); here, the functional structure responsible for the internal *of*-argument has no bearing on the possibility of an agentive *by*-phrase (see (269)).

(268)



(269)a. $\llbracket \text{Appl}_{\text{NOM}}' \rrbracket = \lambda e. \exists x [\text{Theme}(e, x) \wedge x = \iota y [\text{patient}(y)]]$

b. $\llbracket \text{Appl}_{\text{NOM}} P_1 \rrbracket = \lambda e. \exists x [\text{examine}(e) \wedge \text{Theme}(e, x) \wedge x = \iota y [\text{patient}(y)]]$

c. $\llbracket \text{Appl}_{\text{NOM}} P_2 \rrbracket = \lambda e. \exists x [\text{examine}(e) \wedge \text{Theme}(e, x) \wedge x = \iota y [\text{patient}(y)] \wedge \text{Agent}(e, \iota z [\text{doctor}(z)])]$

Moving on to purpose clause adjuncts, we adopt a relatively standard Hintikkan semantics for our infinitives (cf. von Stechow and Heim 2011), but we follow Nissenbaum (2005) in relativising the goal expressed by the purpose clause to the volitional matrix *event* rather than to any one event participant. We take INT to represent the function from events *e* and worlds *w* to the set of worlds *w'* compatible with the goals relative to event *e* (Stephenson 2010a; Grano 2017a).²³ Example (270) provides a preliminary denotation for purpose

²³ The notion of goals or intentions relative to events rather than individuals will be discussed at length in chapter 6.

clauses relative to events.

$$(270) \quad \llbracket (\text{in order}) \text{ to } P \rrbracket^w = \lambda e. \forall w' \in \text{INT}_{e,w}: \exists e' [P(e') = 1 \text{ in } w']$$

Stating goals as relative to events provides an avenue for understanding why purpose clauses are only compatible with compositional event nominalisations, and not with non-compositional/result nouns. As illustrated in (271a), the purpose clause has an open event variable from which the set of compatible worlds may be determined. In (271b) we have the denotation for an argument-bearing event nominalisation, which also has an open event position. As such, the two phrases may combine via predicate modification, as in (271c). The entire nominal comes to denote the set of *expression* events such that *artistic freedom* is an argument, and in all worlds compatible with the goals of the expression event, PRO becomes famous. A suitable adjunct control theory will be required to link the subject of *expression* with the embedded PRO.

$$(271) \text{ a. } \llbracket (\text{in order}) \text{ to become famous} \rrbracket^w = \lambda e. \forall w' \in \text{INT}_{e,w}: \\ \exists e' [\text{become-famous}(e') = 1 \text{ in } w' \wedge \text{Agent}(e') = \text{PRO}]$$

$$\text{ b. } \llbracket \text{expression of artistic freedom} \rrbracket^w = \lambda e. \exists x [\text{express}(e) \\ \wedge \text{Theme}(e, x) \wedge x = \iota y [\text{artistic-freedom}(y)]]$$

$$\text{ c. } \llbracket \text{expression of artistic freedom (in order) to become famous} \rrbracket^w = \\ \lambda e. \exists x [\text{express}(e) \wedge \text{Theme}(e, x) \wedge x = \iota y [\text{artistic-freedom}(y)] \wedge \forall w' \in \text{INT}_{e,w}: \\ \exists e' [\text{become-famous}(e') = 1 \text{ in } w' \wedge \text{Agent}(e') = \text{PRO}]]$$

By hypothesis, non-compositional nominalisations are not derived from anything that contributes a Davidsonian event variable, despite any apparently eventive interpretations. Thus, their incompatibility with purpose clause adjuncts is expected on this account.

In order to adequately account for the telic properties of argument-bearing event nominalisations (as in (260f)) we adopt a version of Kratzer's (2004) *culminate* predicate, and propose that – in the domain of compositional event nominalisation – the Appl_{NOM} functional head is the locus of telicity.²⁴ We may therefore invoke a telic version of Appl_{NOM} which includes a culmination condition, as in (272).²⁵

²⁴ For additional discussion, see (Borer 2005b; Ramchand 2008; Travis 2010; Moulton 2014).

²⁵ The notion of Appl_{NOM} as the location of culmination fits with contemporary analyses of verbal aktionsart (see above), such that structural case is often packaged together with a [+telic] syntactic feature that carries

$$(272) \quad \llbracket \text{Appl}_{\text{NOM-TELIC}} \rrbracket = \lambda y. \lambda e. \exists x [\text{Theme}(e, x) \wedge x = y \\ \wedge \forall z [z \leq x \rightarrow \exists e' [e' \leq e \wedge \text{Theme}(e', z)]]]$$

According to (272), the Appl_{NOM} head asserts a Theme relation between an event e and an existentially quantified entity x , and includes the now familiar specificational relation between x and y . Furthermore, it asserts that for every z such that z is a sub-part of x , there is a sub-event e' of e , such that z is an argument of e' . This denotation has the effect that x now measures out e overtly, such that every relevant part of x stands in an argument-predicate relation with e . Furthermore, it provides an upper bound for the event e , thereby specifying the point of event culmination. For example, consider the nominalisation in (273); the applicative argument *the factory* provides the scale by which completion of the *inspection* event may be judged.

$$(273) \quad \llbracket \text{inspection of the factory} \rrbracket \\ = \lambda e. \exists x [\text{inspect}(e) \wedge \text{Theme}(e, x) \wedge x = \iota y [\text{factory}(y)] \\ \wedge \forall z [z \leq x \rightarrow \exists e' [e' \leq e \wedge \text{Theme}(e', z)]]]$$

We therefore propose that telic aktionsart modifiers such as *in five minutes* carry a selectional restriction, such that the event they modify must contain a culmination condition of the sort in (273). As such, any nominalised verb compatible with a culmination condition will only license telic modifiers in the presence of Appl_{NOM} , and subsequently in the presence of an *of*-DP. Note that this proposal runs contrary to the argument made in Moulton (2014), which proposes that telic modifiers are specifically licensed by a verbal functional aktionsart head. Keying the availability of such modifiers to a particular semantic condition rather than to one specific verbal layer allows us to generalise across categorial domains. It furthermore allows us to accurately predict the distribution of telic modifiers in nominals that do not realise *of*-arguments. That is, if the verb itself packages a culmination condition (e.g., in the case of *ascend*), then telic aktionsart modifiers will be available in corresponding event nominal constructions without the need for an Appl_{NOM} head.

Thus, we have considered each of the diagnostics in (260) that isolate

the culmination condition (or with a quantisation parameter, in the case of (Borer 2005a, 2005b)). If we consider Appl_{NOM} (and its spell-out *of*) to be an assigner of structural genitive case, then its role regarding telicity in eventive contexts is not surprising.

compositionally derived event nominalisation, and have demonstrated how our analysis may account for each one. In each case, the relevant diagnostic was found to be tied to the underlying event variable present in the nominal derivation, rather than to any specific verbal functional material. As such, we derived simultaneously the grammatical behaviours of both argument-projecting and argument-omitting event nominalisations.

4.5. Conclusion

In this chapter we have formulated a system of event nominalisation from which to address the control-like properties observed in the nominal domain in chapter 2. We began with a theoretical survey of contemporary nominalisation theory and determined that the majority of analyses are ‘AS-centric’: they rely on the presence/absence of argument structure within the noun to derive the nominal’s category and subsequent behaviours. We then observed a number of empirical issues with Grimshaw’s original typology and its subsequent instantiations. Specifically, it was found that the behaviour of compositionally derived simple event nominals renders a purely AS-centric approach to nominalisation untenable. We thus reformulated the nominal typology, such that compositionality – not argument structure – was at the heart of the nominalisation process.

We then proposed a syntax and semantics for English deverbal nominalisation that highlighted the importance of the nominal’s composition from an underlying event, as well as the optional nature of argument-projection in this domain. To the latter point, we defined an applicative nominal projection in line with Adger’s (2012) analysis of relational nouns, which borrowed a distinctively copular flavour from den Dikken’s (2006) account of pseudo-partitives. We found that this analysis adequately explained the behaviour of compositional event nominalisations in both argument-projecting and argument-omitting contexts.

The ideas put forward in this chapter are, admittedly, inadequate in explaining derivational nominalisation beyond the limited scope of the examples discussed above. Indeed, the number of questions that remain unanswered could themselves motivate an additional dissertation. What is the nature of durative/atelic PP modifiers, and how can we account for their distribution within event nominalisations? Is a nominal applicative projection of the type discussed above implicated in other, less event-oriented English NP constructions, or in event/non-event NP environments cross-linguistically? If compositionality is truly at the heart of nominal derivation, then where do nominals that have compositional morphology but non-compositional meaning fit in? For the sake of

keeping this thesis in focus, we must regrettably leave these questions behind.

5. INHERENT CONTROL: ASPECTUAL PREDICATES AND THE RAISING/CONTROL AMBIGUITY²⁶

5.1. Introduction

In this chapter we will provide an adequate explanation for the uniform behaviour of aspectual control constructions in nominal and infinitival complement environments, as observed in chapter 2. To this end, we will utilise the compositional event nominalisation framework developed in chapter 4, and will furthermore take account of the so-called raising/control ambiguity that aspectual predicates exhibit (cf. Perlmutter 1970). Our primary goal will be to account for the three generalisations put forward in chapter 2 (examples (90-92), repeated below) as they apply to aspectual exhaustive control predicates.

(274) *Control into NP*

Exhaustive control predicates enforce exhaustive control into de-verbal, eventive NP complements; partial control predicates show no control into NP complements.

(275) *Temporal orientation in NP*

The temporal properties of NP complements mirror those of the corresponding clausal complement, and temporal orientation (where applicable) is identical across these complements.

(276) *Overt nominal subjects under control*

Complex event nominal complements to PC predicates may project an Agent either as a genitive prenominal argument or in a *by*-phrase adjunct; complex event nominal complements to EC predicates may *not* project an Agent in either position, though they may name an abstract possessor in the genitive prenominal position.

In section 5.2 we provide a brief historical overview of the raising/control ambiguity, with a particular focus on recent attempts to reduce both alternants to a single phenomenon. Then in 5.3 we take up Pustejovsky and Bouillon's (1995) claim that the raising/control

²⁶ This chapter is based partly on work carried out in collaboration with Gregor Williamson.

ambiguity can be reduced to the (anti-)causative alternation; we demonstrate that aspectual predicates behave like (anti-)causative predicates regarding all relevant diagnostics. In section 5.4 we provide a novel proposal for aspectual predicates that combines an (anti-)causative syntax and a reduced semantic representation in the spirit of Piñango and Deo (2016). We see in section 5.5 that the proposal put forward correctly derives the generalisations in (274-276), and furthermore accounts for the availability of non-canonical (event/instrument-denoting) subjects in aspectual constructions. We conclude in section 5.6.

5.2. The raising/control ambiguity

5.2.1. Perlmutter (1970)

In his paper ‘The two verbs *begin*’, Perlmutter (1970) proposes that English aspectual predicates such as *begin*, *continue* and *finish* are ambiguous between raising and control instantiations. For Perlmutter, this meant that aspectual verbs could be either (i) intransitive verbs that select a clausal complement, thereby yielding a raising construction, or (ii) transitive verbs that trigger an Equi-NP Deletion transformation, thus yielding a control structure.

Perlmutter’s arguments for a raising analysis of aspectual predicates are robust, and generally demonstrate that the matrix subject occupies a non-thematic position. First, he observes that the aspectual predicate *begin* may take expletive or sentential subjects, as in (277). This is also true of the canonical raising predicate *seem* (see (278a)), but impossible with a typical control predicate, such as *want* (278b).

- (277) a. That Mary was promoted began to annoy Bill.
b. It began to rain.
c. There began to be a commotion.

- (278) a. That Mary was promoted seemed to annoy Bill.
b. *That Mary was promoted wanted to annoy Bill.

Likewise, *begin* displays so-called *active/passive synonymy*. That is, the active construction in (279a) is synonymous with the construction involving a passivised embedded clause in (279b). Again, this observation is in line with the behaviour of canonical raising predicates

(280) and contrasts sharply with control predicates, which do not exhibit active/passive synonymy (see (281)).

- (279) a. The clown began to annoy Joe.
b. Joe began to be annoyed by the clown.

- (280) a. The clown seemed to annoy Joe.
b. Joe seemed to be annoyed by the clown.

- (281) a. The clown wanted to annoy Joe.
b. #Joe wanted to be annoyed by the clown.

The final diagnostic that supports a raising analysis of aspectual predicates concerns idiomatic expressions. Specifically, Perlmutter shows that idiom chunks in the subject position of aspectual verbs retain idiomatic meaning, as in (282). Once again, this is also true of canonical raising verbs (283a) and impossible in control constructions (283b).

- (282) a. Heed began to be paid to urban problems.
b. Headway began to be made toward a solution.

- (283) a. Headway seemed to be made toward a solution.
b. *Headway wanted to be made toward a solution.

Having motivated a raising analysis for the aspectual predicate *begin*, Perlmutter then singles out a number of constructions involving *begin* that are seemingly incompatible with a raising analysis. First, he points to the fact that aspectual predicates can, themselves, take NP objects (see (284a)). Furthermore, *begin* in such examples can undergo passivisation and therefore must have an external theta-role (see (284)).

- (284) a. Sam began the job.
b. The job was begun by Sam.

Perlmutter notes that this conclusion is corroborated by the fact that *begin* may participate in agentive nominalisation formation. As we see in (285a), *begin* yields the agentive nominal *beginner*; an equivalent *-er* nominalisation is unavailable with typical raising verbs (285b).

- (285) a. Peter is a beginner.
b. *Peter is a seemer.

Perlmutter also points to examples such as in (286) to motivate a control analysis of *begin*. In these utterances, we see that *begin* may be embedded under a subject- or object-control predicate. For Perlmutter, the grammaticality of these examples can only be understood if *begin* selects a thematic animate subject. Thus, *begin* in these examples cannot be a raising predicate.²⁷

- (286) a. I tried to begin to work.
b. I forced Tom to begin to work.

Furthermore, Perlmutter contended that aspectual predicates are compatible with the imperative form, as in (287a). We see in (287b) that typical raising verbs are ruled out in this environment, confirming that imperative formation requires an animate subject.

- (287) a. Begin to work!
b. *Seem to work!

The final diagnostics that Perlmutter appeals to in order to motivate a control analysis of aspectual verbs is the distribution of *do so* anaphora in *begin* constructions. Namely, when *begin* takes an animate subject, *do so* may replace *begin* in a coordination construction, as in (288a). However, in (288b) we find that when *begin* takes an inanimate subject, *do so* is no longer licensed. Perlmutter took these examples to be instantiations of control and raising, respectively.

- (288) a. Warren tried to begin to work, and Jerry tried to do so too.
b. *Oil began to gush from the well, and water did so too.

While the raising portion of Perlmutter's argumentation remains virtually undisputed, there have been a number of issues raised concerning the motivation behind a control analysis of aspectual predicates. For example, Newmeyer (1975) notes that aspectual predicates are transparent in terms of selectional restrictions when embedded under control verbs, despite

²⁷ Perlmutter's assumptions here are based on the conditions under which Equi-NP Deletion may trigger.

Perlmutter's assumption that such aspectual predicates must select an animate subject (see (286) above). Consider the examples in (289). We see in (289a,b) that *remember* may embed the aspectual predicate *keep*, and *keep* may likewise embed *forget*. However, we find in (289c) that *remember* may not embed *forget*. The critical example in (289d) demonstrates that, despite (289a,b), the ungrammaticality of (289c) is still present when *keep* intervenes between *remember* and *forget*, thus suggesting that *keep* is transparent in this environment (Newmeyer 1975:33-34).²⁸

- (289) a. I remembered to keep working.
 b. I kept forgetting what my mother told me.
 c. *I remembered to forget what my mother told me.
 d. *I remembered to keep forgetting what my mother told me.

Fukuda (2007) furthermore notes that the usefulness of Perlmutter's *er*-nominalisation diagnostic (see (285)) is questionable. Specifically, Fukuda points out that the most salient interpretation of *beginner* is not in line with a control analysis. That is, the most salient reading of *John is a beginner* is such that John is a novice at some particular trade/skill, not that he is someone who begins (something).²⁹ Counter-examples such as these have motivated a number of alternative contemporary accounts of the raising/control ambiguity, such as 'raising only' analyses (see Hornstein 1999; Boeckx and Hornstein 2003, 2004 on the MTC). In the following section we will discuss one such alternative, in which aspectual predicate constructions are asserted to be invariably mono-clausal.

5.2.2. The mono-clausal hypothesis

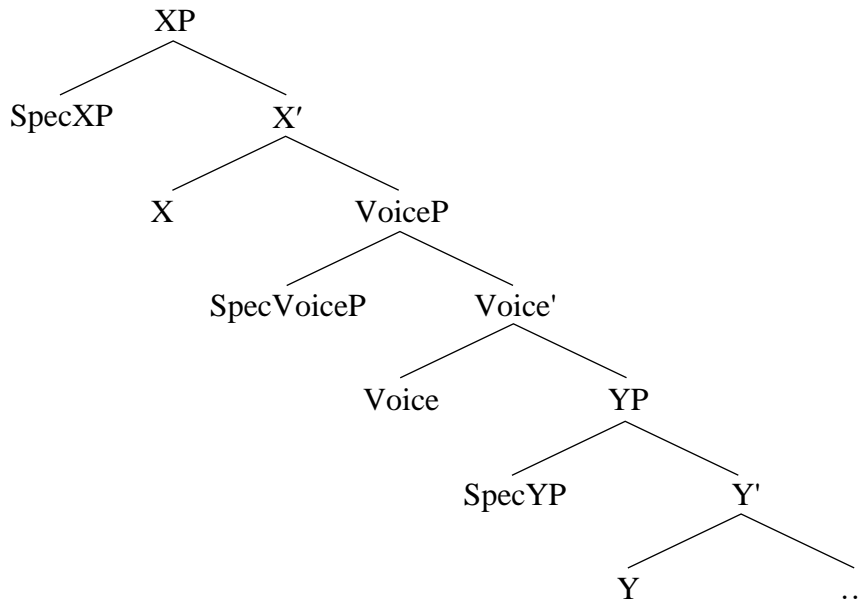
As an alternative to the lexical ambiguity proposed in Perlmutter's (1970) original work, Fukuda (2007) offers an analysis of the raising/control ambiguity in aspectual constructions that relies on variable syntactic positions in which the predicates may be inserted. Specifically, Fukuda argues that the raising/control ambiguity corresponds to the realisation of the aspectual predicate either above or below the projection that introduces the external argument. To illustrate, consider the structure in (290); according to Fukuda,

²⁸ Fukuda (2007) generalises this claim across the class of aspectual predicates. For expository reasons, we cannot fully investigate the selectional transparency of all aspectual verbs, though we see in section 5.3 that *keep* is systematically unique in its behaviour compared to other aspectual predicates.

²⁹ Fukuda furthermore makes the stronger claim that other aspectual predicates fail to undergo *er*-nominalisation entirely, noting *continue* and *keep* specifically.

any aspectual predicate realised at or above XP will be interpreted as raising. Likewise, any aspectual predicate realised at or below YP will be interpreted as control. We assume here that the external argument is introduced in the specifier of a non-eventive Voice projection (Kratzer 1996).

(290)



Fukuda motivates this analysis based on the syntactic properties of aspectual constructions across several different languages, including German (Wurmbrand 2001), Japanese (Fukuda 2006) and Romance (Cinque 2003). Crucially, Fukuda's hypothesis in (290) allows for significant variability in where the aspectual predicate is realised in both its raising and control instantiations. For example, Wurmbrand (2001) motivates an analysis of German aspectual predicates such that they may be realised as either the head of a lexical VP (yielding a control interpretation) or in a functional projection above (certain) modal projections (yielding a raising interpretation). To illustrate, consider first the examples in (291). We see in (291a) that the unambiguous raising verb *scheinen* cannot be embedded beneath a modal. Conversely, in (291b) we find that this same raising verb can itself embed a modal verb.

- (291)a. *Morgen dürfte/muß er die Stadt zu verlassen scheinen.
 tomorrow might/must he the town to leave seem
 'He will/might/must seem to be leaving the town tomorrow.'

- b. Sie schien zu Hause arbeiten zu müssen/können.
 she seemed to home work to must/can
 ‘She seemed to have to/be able to work at home.’

Conversely, predicates that show the raising/control ambiguity, including the German verbs *versprechen* (*promise*) and *drohen* (*threaten*), may be embedded beneath a modal predicate (as in (292)). However, in these environments, Wurmbrand argues that the interpretation of the predicate is unambiguously a control reading. This observation is expected on a structural account of the raising/control ambiguity; when an ambiguous verb is embedded beneath a modal it must be realised in its control location, on the assumption that the raising location is at or above the hierarchical level of modal predicates.

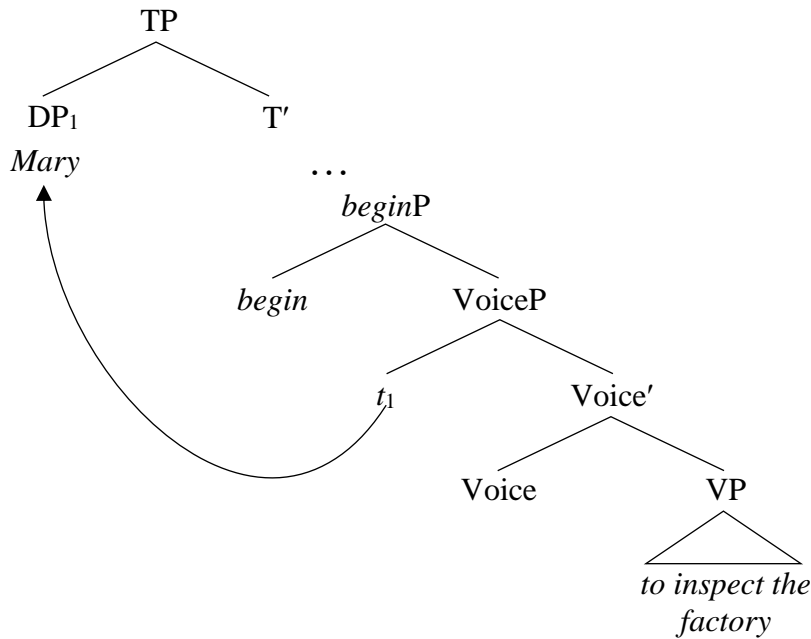
- (292) Er muß ein guter Vater zu werden versprechen/drohen.
 He must a good father to become promise/threaten.
 ‘He must promise/threaten to become a good father.’

Fukuda (2006) motivates a similar analysis of the raising/control ambiguity in Japanese aspectual predicates. However, for Fukuda, neither the raising nor the control instantiations of Japanese aspectual predicates occur as lexical verbal heads. Instead, aspectual ‘raising’ verbs occur in ‘High Aspect’, which projects above VoiceP, whereas aspectual ‘control’ verbs occur in ‘Low Aspect’, a functional projection that intervenes between the lexical VP and the non-eventive VoiceP.

In a similar vein, Grano (2012, 2015) promotes a framework of exhaustive control predicates such that aspectual predicates always occupy a functional layer above VP (in the spirit of Cinque 2006).³⁰ Consider, for example, the toy derivation of *Mary began to inspect the factory* in (293), based on Grano’s mono-clausal analysis. We find that *begin* appears in an independent projection above the verbal subject (specifically in Aspect_{INCEPTIVE}), and *Mary* A-moves up to the specifier of TP. Crucially for Grano, (293) constitutes the underlying structure in both apparent raising and control instantiations of the aspectual verb.

³⁰ Grano pursues a weaker version of Cinque’s ‘functional head’ hypothesis here, such that he maintains that aspectual predicates such as *start* are inherently lexical (in order to account for their DP-selecting aspect). As such, they are potentially ambiguous between a lexical V and a functional head in the inflectional layer of the clause.

(293)



Given that our interests in this thesis are primarily concerned with the behaviour of exhaustive control predicates in nominal complement environments, we will not pursue an in-depth analysis of the mono-clausal hypothesis. Most importantly, however, we note that for the mono-clausal hypothesis, any similarity between nominal and infinitival complement constructions is *prima facie* accidental. We will observe throughout this chapter that this is an undesirable consequence: the ambiguity between raising and control in infinitival environments has a natural parallel in the (anti-)causative alternation that may be observed in aspectual verb constructions in nominal complement environments.

5.3. Aspectual verbs and the causative alternation

In this section we explore the claims made in Pustejovsky and Bouillon (1995) that the causative alternation is at the heart of the raising/control ambiguity in aspectual predicates. Specifically, we will pursue the hypothesis that the aspectual transitivity alternation in example (294) is at its core an (anti-)causative alternation, of the sort found with simplex causative verbs such as *break* in (295).

- (294) a. The official began the London marathon.
b. The London marathon began.

- (295) a. The boy broke the vase.
b. The vase broke.

In section 5.3.1 we review the core empirical generalisations that characterise (anti-)causative predicates. Then in 5.3.2 we confirm that, in all relevant cases, aspectual predicates conform to those generalisations. Note that in this section we will be primarily concerned with aspectual predicates in nominal complementation constructions; the underlying causative alternation will be generalised to the domain of infinitival complementation in section 5.4.3.

5.3.1. The core empirical paradigm

In order to isolate the distinctive qualities of the (anti-)causative alternation (as in (296a,b)), it will be useful to compare it with other types of transitivity alternations, such as the passive in (296b), and the generic middle construction in (296c).

- | | | |
|----------|--------------------------|------------------|
| (296) a. | John broke the vase. | (active) |
| b. | The vase broke. | (anti-causative) |
| c. | The vase was broken. | (passive) |
| d. | This vase breaks easily. | (generic middle) |

Much of the investigation into the (anti-)causative alternation and its related transitivity alternations has been driven by the intuition that the intransitives in (296c,d) retain their external argument at some level of representation, while the anti-causative in (296b) does not. It has likewise been argued that a host of diagnostic tests support this intuition (cf. Manzini 1983; Roeper 1987; Levin and Rappaport Hovav 1995; Reinhart 2000; Schäfer 2008, a.o.). One such diagnostic is the ability of the intransitive to realise its subject overtly. For example, in the passive construction in (297a) we see that an implicit subject may optionally be realised in a *by*-phrase adjunct. The same is not true of anti-causatives; we see in (297b) that an agent-naming *by*-phrase is not licensed in this environment.

- | | | |
|----------|--------------------------------|------------------|
| (297) a. | The vase was broken (by John). | (passive) |
| b. | The vase broke (*by John). | (anti-causative) |

Furthermore, we find that passives differ from anti-causatives in that the former may take purpose clause adjuncts (as in (298a)), as well as agent-oriented adverbial modifiers (299a). We observe in (298b) and (299b) that these adjuncts are impossible in anti-causative

constructions.³¹

- (298) a. The vase was broken [(in order) to erase any incriminating evidence]. (passive)
b. *The vase broke [(in order) to erase any incriminating evidence]. (anti-causative)
- (299) a. The vase was broken (deliberately/on purpose). (passive)
b. The vase broke (*deliberately/*on purpose). (anti-causative)

Unlike passives, generic middle constructions pattern much like anti-causative constructions concerning the above diagnostics: they cannot license subject *by*-phrases, nor can they take purpose clause adjuncts. However, as we see in (300), both passives and middles may take small clause adjuncts, such as *after*-PPs. When these adjuncts are realised, the covert small clause subject (notated below as PRO) may be co-referential with the implicit subject of the matrix intransitive (Stroik 1992; Reinhart 2000). According to Reinhart, the availability of non-obligatory control in these environments is indicative of an implicit matrix subject. As illustrated in the examples below, a PRO subject in the small clause adjunct may be interpreted as the implicit *breaker* associated with the matrix causative.

- (300) a. The vase will be broken [after PRO_{breaker} chipping away at it]. (passive)
b. This vase will break easily [after PRO_{breaker} chipping away at it]. (generic middle)

When we turn to anti-causative constructions, we find that this manner of co-reference is no longer possible. For example, we see in (301) that even when a small clause adjunct is licensed, its subject cannot co-refer with the implicit subject of the anti-causative verb; it must be interpreted arbitrarily. For the authors above, the unavailability of non-obligatory control here follows from the complete absent of a matrix agent, implicit or otherwise.³²

³¹ Schäfer (2009) suggests that the availability of purpose clauses in passives is indicative of a control relation between the implicit subject of the passivised verb and a covert PRO subject in the infinitival adjunct, cf. (Williams 1985) for relevant criticisms.

³² It should be noted that the example in (301) becomes highly degraded/ungrammatical with the realisation of a small clause adjunct in an episodic context (e.g., ??/**The vase broke after chipping away at it*). While the necessity of genericity in licensing *after*-PPs in anti-causative constructions is mysterious, it is ultimately orthogonal to our present concerns. Instead, we note that – even in its generic form – the example in (301)

(301) #Vases often break [after PRO_{breaker} chipping away at them]. (anti-causative)

The final diagnostic to consider is the availability of instrument *with*-PPs. As demonstrated in (302a,b), both passives and generic middle constructions license *with*-PP modifiers that name an instrument. On the other hand, instrument modifiers of this sort are barred in anti-causative contexts, as in (302c). Like purpose clauses and agent-oriented modifiers, it has been argued that instrumental modifiers are only available in the presence of an implicit external argument, thus supporting the hypothesis that anti-causatives truly lack an external argument (cf. Hale and Keyser 1986).

- (302) a. The vase was broken (with a hammer). (passive)
b. This vase will break easily (with my new hammer). (generic middle)
c. The vase broke (*with a hammer). (anti-causative)

Intuitively, the surface subject of an anti-causative verb corresponds thematically to the surface object of its transitive (causative) counterpart. This intuition was famously captured in syntactic terms by Burzio (1981), who proposed that the surface word order in so-called unaccusative constructions is derived via movement of the object to subject position (as in (303a)). This underlying structure contrasts with the one attributed to so-called unergative intransitive constructions, in which the surface subject corresponds to the external argument of the verb (303b) (cf. Perlmutter 1978; Burzio 1986; Levin and Rappaport Hovav 1995, a.o.).

- (303) a. Mary_i fell t_i (unaccusative)
b. Mary danced. (unergative)

This underlying structural difference correlates with a number of syntactic phenomena cross-linguistically, including perfect auxiliary selection. In the following section, we will consider the transitivity alternation found in aspectual predicate constructions, as exemplified in (294) above, and demonstrate that the set of properties associated with the (anti-)causative alternation is likewise present in aspectual environments.

constitutes a *bona fide* anti-causative (rather than a generic middle), based on its incompatibility with instrumental *with*-PPs (e.g., *Vases often break with a hammer/hammers).

5.3.2. Aspectual verbs are (anti-)causative

Given our brief overview of the core empirical patterns associated with the (anti-)causative alternation, we are now in a position to determine whether the transitivity alternation in (294) (repeated below as (304)) is indeed (anti-)causative in nature. We will therefore take each diagnostic in succession and will examine the behaviour of DP-selecting aspectual predicates in both transitive and intransitive instantiations.³³ We will demonstrate that the data below support the hypothesis that aspectual predicates are indeed (anti-)causative.

- (304) a. The official began the London marathon.
b. The London marathon began.

To begin, we note that intransitive aspectual predicates pattern together with anti-causatives in being unable to license an overt external argument. For example, we see in (305) that while the passive in (305b) may take an agent-naming *by*-phrase adjunct, the intransitive in (305c) may not. We demonstrate in (306) that this pattern generalises systematically to other aspectual predicates, such as *continue* and *stop*.³⁴

- (305) a. The official began the London marathon.
b. The London marathon was begun (by the official).
c. The London marathon began (*by the official).
- (306) a. The official continued/stopped the London marathon.
b. The London marathon was continued/stopped (by the official).
c. The London marathon continued/stopped (*by the official).

Next, we see in (307) and (308) that intransitive aspectual predicates once again pattern with anti-causatives in their inability to license infinitival purpose clause adjuncts. Note that we include the optional *in order* here to block an argumental interpretation of the infinitive.

³³ The question of whether DP objects of aspectual predicates always invoke coercion is a contentious issue, and one which falls outside the scope of this thesis. For preliminary discussion, see (B. H. Partee and Rooth 1983; Klein and Sag 1985; Pustejovsky and Bouillon 1995).

³⁴ Though see discussion concerning the verb *keep* at the end of the section.

- (307) a. The London marathon was begun [(in order) to create a diversion].
 b. *The London marathon began [(in order) to create a diversion].

- (308) a. The London marathon was continued/stopped [(in order) to create a diversion].
 b. *The London marathon continued/stopped [(in order) to create a diversion].

Furthermore, like anti-causatives, aspectual intransitive predicates are unable to license agent-oriented modifiers, such as *deliberately* or *on purpose*.

- (309) a. The London marathon was begun (deliberately/on purpose).
 b. *The London marathon began (*deliberately/*on purpose).

Intransitive aspectual predicates also do not permit co-reference between the null subject of an *after*-PP and in implicit matrix subject. This behaviour is again in line with that of anti-causatives, and contrasts with passives and middles (see examples (300,301) above). In order to facilitate a pragmatically felicitous interpretation, we employ the repetitive aspectual predicate *restart* in the examples in (310). We find that the passive and middle constructions (310a,b) permit an interpretation by which the PRO subject of the small clause adjunct is read as co-referent with the implicit subject of *restart*. Critically, this same interpretation is absent in the intransitive aspectual construction (310c); PRO must be interpreted arbitrarily.

- (310) a. The marathon will be restarted [after PRO making some adjustments]. (passive)
 b. This marathon will restart easily [after PRO making some adjustments]. (generic middle)
 c. #Marathons often restart [after PRO making some adjustments]. (anti-causative)

The final test to consider in diagnosing the presence of an implicit external argument is the availability of instrument *with*-PPs. Unlike our previous tests, aspectual intransitive constructions at first glance appear to pattern *against* anti-causatives in this regard; they may optionally take adjunct *with*-PPs that *prima facie* look like instruments. For instance, compare the typical (anti-)causative paradigm in (311) with the aspectual alternation in (312), in which both the passive and intransitive counterparts may realise a *with*-PP.

- (311) a. The vase was broken (with a hammer).
 b. The vase broke (*with a hammer).
- (312) a. The marathon was begun (with a ceremony).
 b. The marathon began (with a ceremony).

This apparent counter-example does not, however, generalise cleanly across the board. While the *with*-PP in (312b) is acceptable, the instrument *with*-PPs in (313) below are all either unacceptable or highly marked.

- (313) a. The victim stopped her attacker's advance (with a crowbar).
 b. The attacker's advance stopped (*with a crowbar).
 c. The astronaut continued his journey (with secondary thrusters).
 d. The journey continued (*/?with secondary thrusters).
 e. The official began the marathon (with a flag).
 f. The marathon began (*/? with a flag).

We contend that the *with*-PP in (312b) does not denote an instrument, but rather is *specificational* in nature. Informally speaking, we will see in section 5.4.1 that aspectual predicates are best analysed as predicates that select event-denoting objects and introduce a sub-event of the selected event. The precise way in which the sub-event is related to the selected event will be entirely dependent on the aspectual predicate in question (e.g., *begin* introduces an *initial* sub-event, *finish* a *final* sub-event, etc.). We argue that the PP adjunct in (312b) *specifies* the content of the sub-event introduced by the aspectual verb. That is, *a ceremony* in (312b) does not name the instrument used to begin the marathon, but instead itself denotes the initial sub-event of the marathon.

The intuition guiding the notion of specificational *with* may be captured with appropriate paraphrases. For example, we find that the passive construction in (314a) is ambiguous between an *instrumental* interpretation (paraphrased in (314b)), and a *specificational* reading (314c).

- (314) a. The London marathon was begun (with a ceremony).
 b. ⇒ A ceremony was used to begin the London marathon. (instrumental)

- c. ⇒ The beginning of the London marathon consisted of a ceremony-event. (specificational)

Furthermore, we see in (315) that the intransitive aspectual construction in (315a) does not permit the instrumental paraphrase in (315b). Instead, the only possible interpretation of the *with*-PP is as in the specificational reading (315c). Thus, despite initial observations, aspectual intransitive constructions pattern with anti-causatives in being unable to license a *bona fide* instrumental adjunct.

- (315)a. The London marathon began (with a ceremony).
- b. ⇏ A ceremony was used to begin the London marathon. (instrumental)
- c. ⇒ The beginning of the London marathon consisted of a ceremony-event. (specificational)

This account furthermore provides a natural explanation as to why the *with*-PPs in (313b,d,f) result in ungrammaticality/degradedness. In these cases, the content of the *with*-PPs does not lend itself to the eventive interpretation necessary for specifying the relevant sub-event picked out by the aspectual predicate. Thus, while the aspectual intransitive in (316a) does not give rise to either the instrumental or specificational readings in (316b,c), an alternative specificational reading may be realised just in case the object inside the *with*-PP is coerced into some relevant event (as in (316d)).

- (316)a. The London marathon began (with a flag).
- b. ⇏ A flag was used to begin the London marathon. (instrumental)
- c. ⇏ The beginning of the London marathon consisted of a flag-event. (specificational)
- d. ⇒ The beginning of the London marathon consisted of a flag-waving-event. (coerced specificational)

This phenomenon of specificational *with* is not limited to English aspectual constructions; Hungarian aspectual intransitives also exhibit specificational adjunction. For instance, the transitive aspectual construction in (317a) alternates with the intransitive in (317b). In the latter example, the adjunct must specify the nature of the initial sub-event of the surface subject, despite being marked with instrumental (INSTR-) case; it cannot be interpreted as

an instrument.

- (317) a. Lengyelország megszállása kezdte el a második világháborút
Poland invasion-POS started PRT the second world-war
'The invasion of Poland started the Second World War.'
- b. A második világháború Lengyelország megszállásával kezdődött
The second world-war Poland invasion-POS-INSTR started
'The Second World War started with the invasion of Poland.'

With the availability of (some) *with*-PPs independently accounted for, we find that the aspectual intransitive construction uniformly patterns with the anti-causative construction regarding the presence/absence of an implicit external argument. The above observations converge on the fact that aspectual predicates are indeed (anti-)causative, and thus predicts that aspectual intransitive constructions will be structurally unaccusative (as in (318)), rather than unergative. That is, the surface subject in aspectual intransitive constructions is in fact the internal argument of the predicate, with surface word order derived via movement.

- (318) The London marathon_i began t_i

The unaccusative nature of aspectual intransitives is supported by the fact that DP-selecting English aspectual predicates may realise dummy subjects in some cases, as illustrated in (319). This structure is likewise implicated by the auxiliary that Italian aspectual predicates combine with to form the perfect. As we see in (320), the Italian aspectual predicate *iniziare* must select the perfect auxiliary *essere* (*to be*), rather than *avere* (*to have*). This behaviour is typical of Italian unaccusatives/anti-causatives (see (321)), and alternates with unergatives, which must select *avere* (see (322)) (cf. Burzio 1986).

- (319) a. There began a great commotion in the lobby.
b. Thus ends the life of a great man.

- (320) a. La festa è iniziata (intransitive aspectual)
The party AUX.BE.3sg begun
b. *La festa ha iniziata
The party AUX.HAVE.3sg begun

‘The party has begun.’

- (321) a. La nave è affondata (unaccusative)
The ship AUX.BE.3sg sunk
b. *La nave ha affondata
The ship AUX.HAVE.3sg sunk
‘The ship has sunk.’

- (322) a. Maria ha cantato (unergative)
M. AUX.HAVE.3sg sang
b. *Maria è cantato
M. AUX.BE.3sg sang
‘Maria has sung.’

Before concluding, it must be noted that the aspectual predicate *keep* is markedly different from other aspectual verbs. As we see in (323), it conforms to all of Perlmutter’s (1970) diagnostics sensitive to an underlying raising structure: (i) it accepts sentential subjects, as in (323a), (ii) it shows synonymy between the active and passive counterparts in (323b,c), and (iii) idiom chunks in subject position retain their idiomatic interpretation (see (323d)).

- (323) a. That Mary was promoted kept annoying Bill.
b. The clown kept annoying Joe.
c. Joe kept being annoyed by the clown.
d. Headway kept being made toward a solution.

However, unlike other aspectual predicates, *keep* is incapable of appearing in simple transitive constructions (see (324a)). Likewise, there is no intransitive variant of *keep* comparable to the anti-causatives observed with the predicates above (see (324b)).³⁵ In fact, the only manner in which one may realise a direct object DP in the complement position of *keep* is in the presence of a secondary predicate, as illustrated in (325).

- (324) a. *The official kept the London marathon.
b. *The London marathon kept.

³⁵ Note that transitive and intransitive instantiations of *keep* do exist in non-aspectual environments, as in *John used to keep rabbits*, or *this cheese should keep (for months)*. Given that the current investigation concerns only the behaviour of aspectual predicates, we put these uses of the verb aside.

- (325) a. John kept the beer **cold**.
b. The victim kept her attacker **subdued**.
c. The official kept the London marathon **running on schedule**.

As such, we contend that the behaviour of the predicate *keep* is varied enough from other verbs of the aspectual sub-type as to warrant its own separate analysis. While a full account of the predicate is beyond the scope of the present work, we refer the reader to Neeleman and van de Koot's (2012) analysis, such that *keep* implicates a relation of *maintenance* rather than *causation*.

In summary, we have motivated an (anti-)causative analysis of aspectual predicates, based primarily on the lack of implicit external argument in intransitive constructions. In the next section we will formalise our account of English aspectual verbs, in which the (anti-)causative flavour of these predicates will be implicated in deriving the raising/control ambiguity.

5.4. A novel proposal for aspectual predicates

In this section we will develop a concrete syntax and semantics for aspectual predicates that (i) captures the (anti-)causative nature of aspectual predicates, as discussed in section 5.3, and (ii) accounts for the core properties of aspectual constructions, which generalise across infinitival and nominal complement environments (see chapter 2). To this end, we will employ our analysis of compositional nominalisation in English, as put forward in chapter 4.

We begin in section 5.4.1 by building a simplified, extensional event semantics for aspectual predicates, based primarily on the classical mereological framework of Champollion and Krifka (2016). Then in section 5.4.2 we demonstrate that by exploiting several independently motivated methods of semantic composition, we can account for nominal and infinitival complement constructions with a single lexical entry. Finally, in section 5.4.3 we adopt a syntactic analysis of the external argument such that the (anti-)causative alternation in DP environments and the raising/control ambiguity in infinitival environments are simultaneously derived.

5.4.1. A radically simplified semantics

Contemporary analyses of aspectual control predicates are primarily motivated by the behaviour of aspectual verbs in the environment of an infinitival complement.³⁶ For example, the lexical entry for *begin* in (326) is adapted from Landau (2015), and is based on the semantics of the progressive (Condoravdi 2009). Abstracting away from the contribution of degree variables, this denotation is meant to capture the intuition that the aspectual predicate relates its subject to a *property of individuals* denoted by its infinitival complement. In the case of *begin* specifically, (326) asserts that some property P holds of individual x in both the actual world, as well as in some world that follows the normal course of events (the *inertia world*, $w' \in \text{IN}_w$).

$$(326) \quad \llbracket \text{begin} \rrbracket^{w,g} = \lambda P_{\langle d, \langle e, st \rangle \rangle} . \lambda d' . \lambda x . \lambda e' . P(d', x, e') = 1 \text{ in } w \wedge \text{Cause}(x, e') \text{ in } w \wedge \\ \exists \langle e'', w', d'' \rangle [w' \in \text{IN}_w \wedge e' \subset e'' \wedge d' < d''] , P(d'', x, e'') = 1 \text{ in } w'.$$

However, without further revision or stipulation, the lexical entry in (326) is entirely incompatible with eventive nominal complements. Specifically, the aspectual verb requires a property of individuals (type $\langle e, vt \rangle$) as its input, but we established in chapter 4 that event nominals denote events *per se* (type $\langle v \rangle$). In addressing this apparent type mismatch, we have the following three logical possibilities: (i) propose a separate, distinct lexical entry for all aspectual predicates in their DP-selecting aspect, (ii) exploit a type-shifting operation that converts event nominals of type $\langle v \rangle$ to properties of individuals (type $\langle e, vt \rangle$), thereby establishing (326) as a unified lexical entry, or (iii) propose an alternative unified lexical semantics that does not take as its input a property of individuals.

Immediately, we reject option (i) for its patent failure to capture the many commonalities between nominal and infinitival constructions, thus rendering these mere empirical accidents. Option (ii) fares somewhat better in this regard; coercive type-shifting of the nominal complement could hypothetically allow the nominal to enter into the same computation as an infinitival complement, thereby explaining the empirical similarities between the two complement types. Furthermore, an individual to property type-shifting operation has been independently motivated in the semantic literature. For example, Partee's (1987) type-shifting function *IDENT* takes an individual of type $\langle e \rangle$ such as *the king* in (327a) and yields a property of individuals (type $\langle e, t \rangle$), as in (327b).

- (327) a. John saw the king; $\llbracket \text{the king} \rrbracket = \iota x [\text{king}(x)]$
 b. John is the king; $\llbracket \text{the king} \rrbracket = \lambda x . \text{king}(x) \wedge \forall y [\text{king}(y) \rightarrow y = x]$

³⁶ See Piñango and Deo (2016) for a recent alternative based on coerced DP complements.

There are at least two non-trivial issues in appealing to this kind of type-shifting operation to derive the generalised properties of aspectual constructions. First, the relevant type-shifting operation would have to possess the unprecedented ability to add a thematic participant that is not present in the underlying definite description of the nominal. By way of illustration, consider the compositional event nominal in (328a), which denotes the unique event of destroying Rome (type $\langle v \rangle$). Application of Partee's *IDENT* function will yield a *property of events* (type $\langle v, t \rangle$) which may predictably predicate a nominal argument that describes an event, as in (328b). Crucially, this kind of type-shifting does not yield a property of being the destroyer of Rome. Thus, the oddity of the example in (328c) results from the ascription of a property of events to an individual.

- (328)a. Nero watched the destruction of Rome; \llbracket the destruction of Rome $\rrbracket =$

$$\iota e \exists x [\text{destroy}(e) \wedge \text{Theme}(e, x) \wedge x = \iota y [\text{Rome}(y)]]$$
- b. The event (that Nero watched) was the destruction of Rome.
- c. ?Nero was the destruction of Rome.

A second problem with appealing to type-shifting comes from the experimental literature concerned with the effects of coercion on linguistic processing. In general, it is often hypothesised that coercive mechanisms such as type-shifting operations incur higher real-time processing costs by the listener/reader (cf. McElree et al. 2001; Pytkänen and McElree 2006). However, Traxler et al. (2002) demonstrate that there is little to no evidence for invoking coercive type-shifting in environments involving aspectual predicates and event-denoting DP complements. Specifically, the authors found that aspectual sentences such as *the boy started the fight* did not incur any significant increase in processing times when compared to non-aspectual control sentences, such as *the boy saw the fight*. Conversely, aspectual sentences involving concrete/referential DP objects (such as *the boy started the puzzle*) were found to be significantly more difficult for the reader to process, compared to the corresponding controls (e.g., *the boy saw the puzzle*). The authors therefore argue that these observations suggest that no coercive type-shifting mechanism is required to compose aspectual predicates with event-denoting DP objects.

We will therefore pursue option (iii): we will define new lexical entries for aspectual predicates that do not require a property of individuals as their input. Following recent work by Piñango and Deo (2016), we couch our analysis of aspectual predicates within the framework of classical mereology (Krifka 1989, 1992, 1998; Champollion and

Krifka 2016). As in chapter 3, we adopt a Neo-Davidsonian event semantics such that a verb contains an open event argument position (Davidson 1967), as well as the Kratzerian Voice hypothesis (Kratzer 1996). Given our observations concerning event nominal complements to aspectual predicates, we take as our starting point the simplistic denotation in (329); *begin* introduces an event argument e and selects another event e' as its internal argument.

$$(329) \quad \llbracket \text{begin} \rrbracket = \lambda e'. \lambda e. \text{begin}(e, e')$$

The lexical entry in (329) will return true iff event e and event e' stand in the relevant *begin* relation. This denotation provides some initial purchase on how event nominals might compose with aspectual predicates. However, in order to make explicit the nature of this *begin* relation, we need to define the notions of *parthood* (\leq) and *proper parthood* ($<$) (Champollion and Krifka 2016), as in (330) and (331), respectively.

$$(330) \quad \textit{Parthood}$$

$x \leq y$ iff $x \oplus y = y$ where \oplus is the two-place *sum operation*

$$(331) \quad \textit{Proper Parthood}$$

$x < y$ iff $x \leq y \wedge \exists z [z \leq y \wedge \neg(z \leq x)]$

We furthermore define the *overlap* relation (\otimes) as in (332).

$$(332) \quad \textit{Overlap}$$

$x \otimes y$ iff $\exists z [z \leq x \wedge z \leq y]$

Finally, we define relations of *precedence* ($<$) as a strict linear order on the domain of temporal intervals (D_i). Precedence is transitive (333a), irreflexive (333b), asymmetric (333c) and connected (333d).

$$(333) \quad \textit{Precedence}$$

for all $x, y, z \in D_i$

- a. $(x < y \wedge y < z) \rightarrow x < z$
- b. $x \not< x$
- c. $x < y \rightarrow y \not< x$
- d. $x \neq y \rightarrow (x < y \vee y < x)$

With these definitions in mind, we propose the revised entry for *begin* in (334). Now, the predicate relates event e and event e' by *initial part* relation $<_{initial}$. Note that the temporal trace function τ returns the run-time of any event e ($\tau(e)$).

(334) *Begin*

$$\llbracket \text{begin} \rrbracket = \lambda e'. \lambda e. e <_{initial} e'$$

$$\text{where } e <_{initial} e' \text{ iff } e < e' \wedge \forall e'' [e'' \leq e' \wedge \neg (e \otimes e'') \rightarrow \tau(e) < \tau(e'')]$$

The result is a relation between an initial sub-event e and the complement event e' , such that e is a proper part of e' , and for any other part e'' of e' that does not overlap the initial part e , the run-time of e precedes the run-time of e'' . Ordering the event sub-parts of *begin* by event run-time has the desirable consequence that, with only minimal changes, the semantics in (334) may be extended to characterise the lexical meaning other aspectual predicates. For example, like *begin*, the aspectual verb *finish* intuitively picks out a sub-part of its event complement. However, *finish* seems to pick out the *final* sub-part of the event in question, rather than the *initial* sub-part denoted by *begin*. We may thus define the \leq_{final} relation as in (335), such that all other sub-parts of the selected event are asserted to precede the *finish* event. We furthermore include the presupposition that the complement event had a *beginning* event.

(335) *Finish*

$$\llbracket \text{finish} \rrbracket = \lambda e'. \lambda e. e <_{final} e'$$

$$\text{where } e <_{final} e' \text{ iff } e < e' \wedge \forall e'' [e'' \leq e' \wedge \neg (e \otimes e'') \rightarrow \tau(e'') < \tau(e)]$$

$$\text{presupposes } \exists e <_{initial} e'$$

We may likewise capture the semantic character of non-ordinal aspectual predicates, such as *continue*. To this end, we provide the lexical entry in (336), which asserts that the *continue* event simply picks out some sub-part of the complement event; it remains unspecified regarding event run-time.

(336) *Continue*

$$\llbracket \text{continue} \rrbracket = \lambda e'. \lambda e. e < e'$$

$$\text{presupposes } \exists e'' [\exists e'' <_{initial} e' \wedge e'' \neq e]$$

In sum, representing aspectual predicates in terms of parthood relations between events

provides an intuitive schematic for characterising the unique content of each individual aspectual predicate. In the next section, we will see that the lexical semantic denotations developed thus far will provide a working model by which to account for both nominal and infinitival complementation in aspectual constructions.

5.4.2. Exploiting variable composition

Assuming the simplified aspectual denotations proposed in the previous section, composition between the aspectual predicate and its compositional event nominal complement becomes straightforward. For example, recall that in chapter 3 we provided a denotation such as that in (337a) for the non-argument-projecting compositional event nominal *the inspection*. Specifically, the compositionally derived noun phrase denotes the set of *inspection* events, and the definite determiner binds the event variable and returns the unique inspection event. Given that aspectual predicates select for events directly under our analysis, composition may proceed via *functional application*, as in (337b) (Heim and Kratzer 1998).

- (337)a. $\llbracket \text{the inspection} \rrbracket = \iota e' \exists x [\text{inspect}(e') \wedge \text{Theme}(e', x)]$
 b. $\llbracket \text{begin the inspection} \rrbracket = \lambda e. e <_{\text{initial}} \iota e' \exists x [\text{inspect}(e') \wedge \text{Theme}(e', x)]$

The same is true of compositional event nominals which realise an *of*-argument internally; the relation mediated by Appl_{NOM} between the nominal head and the applicative argument does not change the final denotation of the eventive DP.

- (338)a. $\llbracket \text{the inspection of the factory} \rrbracket = \iota e' \exists x [\text{inspect}(e') \wedge \text{Theme}(e', x) \wedge x = \iota y [\text{factory}(y)]]$
 b. $\llbracket \text{begin the inspection of the factory} \rrbracket = \lambda e. e <_{\text{initial}} \iota e' \exists x [\text{inspect}(e') \wedge \text{Theme}(e', x) \wedge x = \iota y [\text{factory}(y)]]$

One immediate and desirable consequence of this analysis is that (gerundive) nominalisation of the aspectual predicate itself correctly picks out the unique relevant sub-event of any embedded event. To illustrate, consider the nominal gerund *beginning* in (339); the DP correctly comes to denote the unique initial sub-event of the unique inspection event. For the sake of simplicity, we assume that the nominal gerund combines with its event complement in the same manner as its corresponding verb.

$$(339) \quad \llbracket \text{the beginning of the inspection of the factory} \rrbracket = \lambda e. e <_{\text{initial}} \lambda e' \exists x \\ \llbracket \text{inspect}(e') \rrbracket \wedge \text{Theme}(e', x) \wedge x = \iota y [\text{factory}(y)]$$

However, while composition between the aspectual predicate and its event nominal complement may be more straightforward under this analysis, composition with infinitival complements has become less so. Indeed, we have entirely reversed the theoretical issue that we faced with event nominal complements in section 5.4.1: composition with infinitival properties of individuals (type $\langle e, vt \rangle$) results in an apparent type mismatch. Like we saw in the case of nominals, we could attempt to invoke some coercive type-shifting mechanism in order to rectify the mismatch and allow composition to proceed. Aside from being entirely ad hoc, such a type-shifting operation would have to possess the unprecedented characteristic of decreasing the predicate's arity two-fold; it would have to yield an event *per se* from a function from individuals to functions from events to truth values. Instead, we argue that there is a natural, non-coercive method by which non-finite complements can combine with event-selecting aspectual predicates. To this end, we will exploit two independently motivated notions from two distinct corners of the generative literature: (i) the hypothesis that certain non-finite clauses are maximally verb phrases (VPs or ν Ps/VoicePs), and (ii) the compositional rule *Restrict* put forward by Chung and Ladusaw (2004).

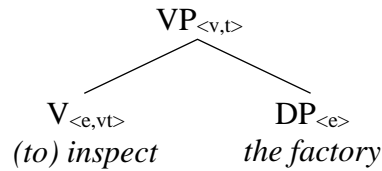
In a series of works, Wurmbrand (1998, 2001, 2002, 2006, 2014) motivates the hypothesis that non-finite clausal complements are not structurally uniform, despite apparent surface similarities. Furthermore, Wurmbrand argues that the structural size of the infinitive depends largely on the nature of the embedding predicate, and that the observed syntactic variability is tied to the variable projection of Tense and Aspect within the non-finite complement. Crucially for our purposes, the structure implicated by the tenseless infinitives embedded under aspectual predicates is comparatively small, being maximally projections of V or Voice.³⁷ As such, we provide the type-theoretic compositions in (184) and (225) as the only two possible structures for tenseless infinitives under Wurmbrand's system.³⁸ In (184) we see that the infinitive is simply a lexical verb phrase (VP), which appears without a subject position; it is this structure that may be implicated in cross-

³⁷ For motivation on this point, see chapter 3 section 3.5, as well as (Di Sciullo and Williams 1987; Wurmbrand 2001; Cinque 2006, a.o.).

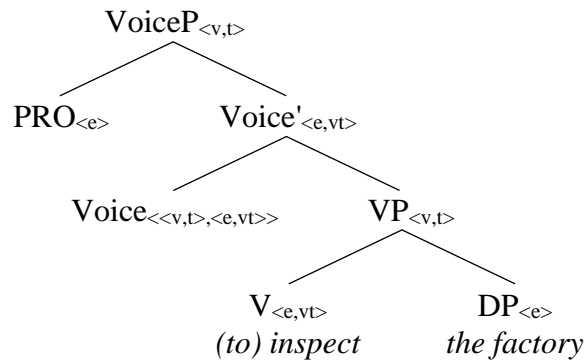
³⁸ We disregard here the possibility of variable flavours of the Voice head (i.e., *active*, *passive*, *middle*, *causative*, etc.). These different possible structures are orthogonal to the claim that any maximal projection up to VoiceP will be a predicate of events (type $\langle v, t \rangle$).

linguistic restructuring phenomena. In (225), on the other hand, the infinitive projects up to VoiceP, and includes a PRO subject. Critically, both the VP and VoiceP versions of the tenseless infinitive constitute predicates of events (type $\langle v,t \rangle$) at their left most edge.

(340) *Tenseless Infinitive (VP)*



(341) *Tenseless Infinitive (VoiceP)*



As such, the semantic denotations in (342a) and (342b) provide logical forms for the infinitives in (184) and (225), respectively. We find that, in both cases, the infinitive contains an open event variable; (342a) denotes the set of inspection events whose theme is *the factory*, while (342b) denotes the set of inspection events whose theme is *the factory* and whose agent is some PRO.

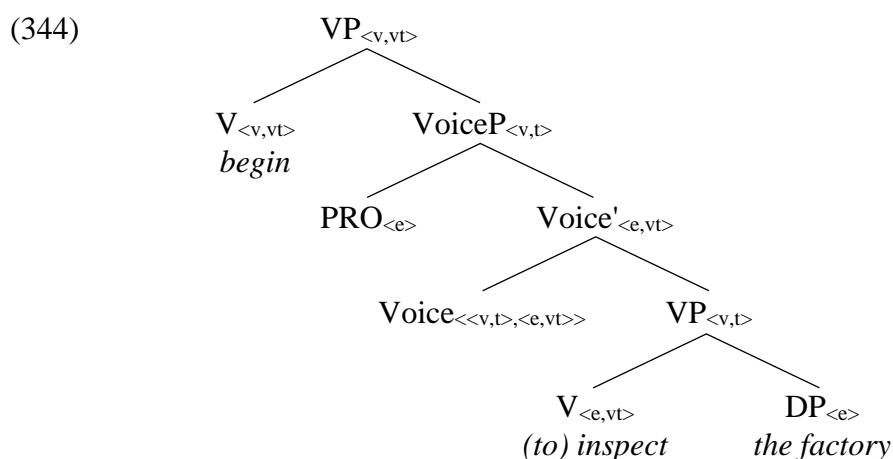
- (342) a. $\llbracket_{\text{VP}} \text{to inspect the factory} \rrbracket = \lambda e. \text{inspect}(e) \wedge \text{Theme}(e, \text{the factory})$
 b. $\llbracket_{\text{VoiceP}} \text{PRO to inspect the factory} \rrbracket = \lambda e. \text{inspect}(e) \wedge \text{Theme}(e, \text{the factory})$
 $\quad \quad \quad \wedge \text{Agent}(e, \text{PRO})$

Turning now to how these predicates of events compose with our aspectual verbs, we turn to the compositional method *Restrict* (Chung and Ladusaw 2004). We provide a definition of *Restrict* in (343) in terms of events.

(343) *Restrict (eventive)*

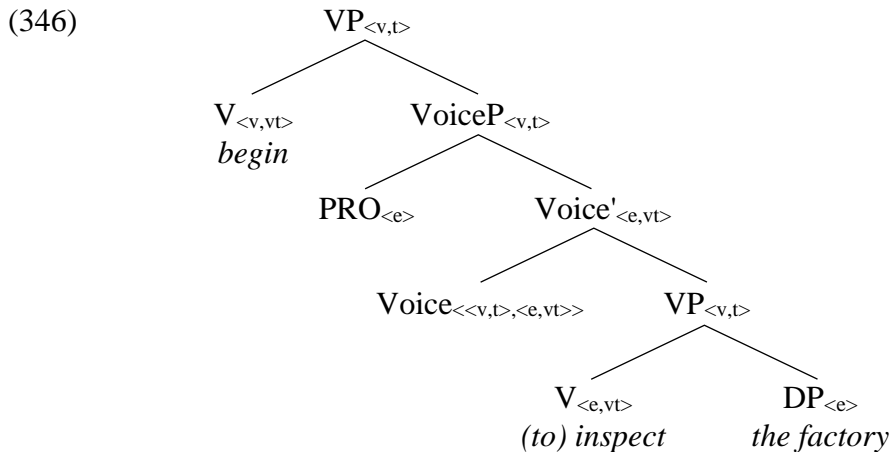
Let γ be a node, and $\{\alpha, \beta\}$ the set of its daughters such that if $\llbracket \alpha \rrbracket$ is of type $\langle v,vt \rangle$ and $\llbracket \beta \rrbracket$ is of type $\langle v,t \rangle$, then, $\llbracket \gamma \rrbracket = \lambda e. \lambda e'. \llbracket \alpha \rrbracket(e)(e') \wedge \llbracket \beta \rrbracket(e)$.

Rather than saturating an open argument position, *Restrict* allows a predicate to restrict the denotation of an open argument position from its original domain to the sub-domain in which the restricting predicate holds. To illustrate, consider the composition of the aspectual predicate *begin* with the VoiceP infinitive *to inspect the factory* in (344). Here, the VP combines via *Restrict*, and as such shifts the denotation of the open event variable e' from the domain of events to the sub-domain of events that are inspection events, and whose theme argument is *the factory* (see (345)).



(345) $\llbracket(344)\rrbracket = \lambda e'. \lambda e. e <_{initial} e' \wedge \text{inspect}(e') \wedge \text{Theme}(e', \text{the factory})$

In order to saturate the open event position that is now restricted by the infinitival predicate of events, we invoke a step of *existential closure*, in the sense of Heim (1982). For now, this step will remain implicit in the composition of the aspectual predicate and its non-finite complement by *Restrict*; we will discuss alternative methods of making this step explicit in 5.4.3. Thus, *Restrict* plus *existential closure* of the event argument yield the type-driven composition in (346), and the semantic denotation in (347). Note that (346) is identical to (344) save for the semantic type of the matrix VP. Note also that the denotation in (347) is functionally equivalent to the denotation in (338b) above, involving an event nominal complement.



(347) $\llbracket (346) \rrbracket = \lambda e \exists e' [e <_{initial} e' \wedge \text{inspect}(e') \wedge \text{Theme}(e', \text{the factory})]$

We have thus provided a compositional semantic framework for aspectual predicates such that a single lexical entry is implicated in both nominal and infinitival complement environments. In the next section we will see that, by couching our lexical semantics in a standard (anti-)causative syntactic/semantic framework, we can derive both the (anti-)causative alternation in DP-selecting constructions, as well as the raising/control ambiguity observed in infinitival complement environments.

5.4.3. Putting it all together with an (anti-)causative syntax

In sections 5.4.1 and 5.4.2 above we have provided a theoretical account of aspectual predicates which posits a single lexical entry across multiple complement domains. The final piece of the puzzle is to extend this analysis to capture both the (anti-)causative nature of aspectual verbs in a construction with a nominal complement, as well as the raising/control ambiguity in a construction with an infinitival complement. To this end, we will adopt an (anti-)causative framework that follows in spirit proposals by Pyllkkänen (2002, 2008), Kratzer (2005), Alexiadou et al. (2006) and Schäfer (2008).

There are a number of ways in which we could incorporate a causative element into the syntax and/or semantics of our aspectual predicates. Following Levin and Rappaport Hovav (1995), we might assume that causative aspectual verbs are lexically transitive and derive the anti-causative counterpart via a process of *de-transitivisation* (see also (Chierchia 2004)). We could alternatively make the opposite assumption that (anti-)causatives are inherently unaccusative, and that transitive causative instantiations of the predicate result from the syntactic projection of a causing event above the verbal root (see

(Ramchand 2008; Pylkkänen 2008) for analyses to this effect). Further still, we could invoke a thematic view of causation, such that a causative relation is mediated by a two-place thematic Cause predicate that links an external argument with its verb (in the spirit of (Reinhart 2000; Neeleman and Van de Koot 2012)). It is important to note here that the underlying nature of causation and its linguistic expression is largely orthogonal to the goals of this dissertation, and as such we will not attempt to argue in favour of one particular causative framework over another. Instead, we will adopt a model of causation with an established granularity, in order to make our conclusions as explicit as possible. We leave it to future research to ascertain the impact (if any) aspectual (anti-)causatives have on the (narrowly) linguistic semantics of causation.

The particular causative framework that we will begin with below follows in the spirit of Pylkkänen (2002, 2008), and asserts that both transitive and intransitive instantiations of (anti-)causative predicates are derived from a common base (in this case, a subject-less VP). We assume further that the causative variant involves the projection of a causative v head, which we label CAUSE and define in (348a), plus the projection of a typical agentive Voice projection (see (348b)). For the sake of simplicity, we will assume that the anti-causative lacks both CAUSE and Voice.^{39,40}

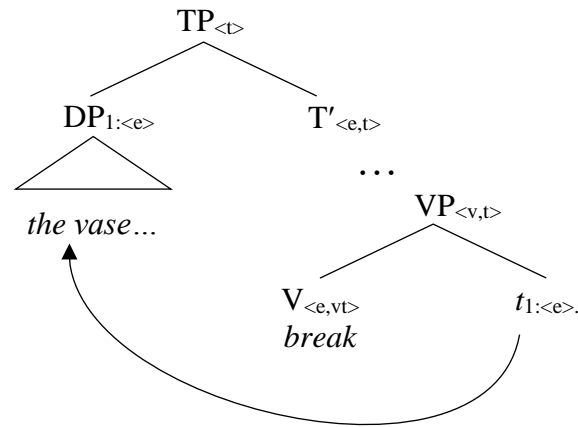
- (348) a. $\llbracket \text{CAUSE} \rrbracket = \lambda P_{\langle v, t \rangle} . \lambda e . \exists e' [P(e') \wedge \text{Cause}(e, e')]$
 b. $\llbracket \text{Voice}_{[+\text{AGENT}]} \rrbracket = \lambda P_{\langle v, t \rangle} . \lambda x . \lambda e . P(e) \wedge \text{Agent}(e, x)$

To illustrate, consider the toy derivation of the simple lexical causative construction *Mary broke the vase* in (349). In its intransitive aspect (349a), the lexical VP never combines with CAUSE, nor does it combine with Voice, and thus no external argument is realised. The internal argument thus moves to the specifier of TP to receive nominative case. On the other hand, the transitive causative construction in (349b) invokes both CAUSE and Voice_[+AGENT]. Note that we abstract away from the notion of result-states here.

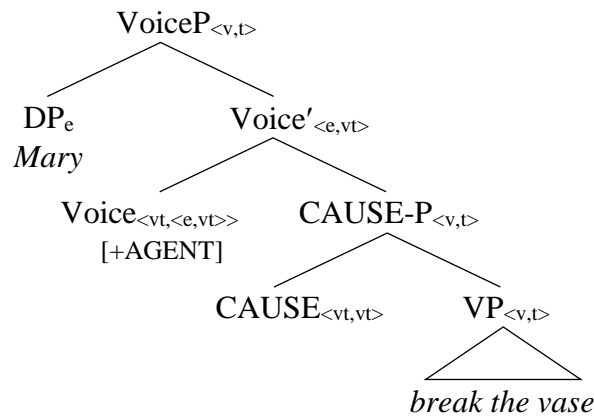
³⁹ This framework of causation necessarily requires the assumption of two distinct layers in the verbal extended projection: an eventive v layer and a non-eventive Voice layer (cf. Harley 2009).

⁴⁰ Alternative proposals involve the projection of a specifically unaccusative/anti-causative v head above the lexical VP that encodes a BECOME event (e.g., Pylkkänen 2002, 2008), as well as the claim that both causative and anti-causative variants include the projection of CAUSE (cf. Alexiadou et al. 2006; Schäfer 2008).

(349) a.



b.



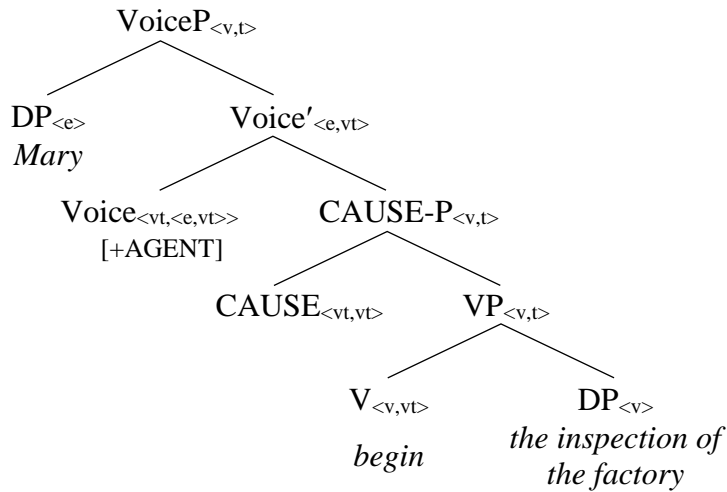
(350) a. $\llbracket(349a)\rrbracket = \exists e \exists e' [\text{break}(e') \wedge \text{Theme}(e, \text{the vase})]$

b. $\llbracket(349b)\rrbracket = \exists e \exists e' [\text{break}(e') \wedge \text{Theme}(e, \text{the vase}) \wedge \text{Cause}(e, e')$

$\wedge \text{Agent}(e, \text{Mary})]$

For constructions involving aspectual predicates with compositional event nominal complements, we find that the above structures in (349a,b) can be employed wholesale. As illustrated in (115), the first event argument of *begin* is saturated by the definite compositional event nominal, thereby coming to denote the initial sub-event of an inspection event. Subsequently, the resulting predicate of events combines with the causative *v* layer CAUSE-P, which introduces the causing event of that initial sub-event. Finally, an agent-selecting Voice projection asserts *Mary* to be the agent of the causing event, as illustrated in the corresponding denotation in (352).

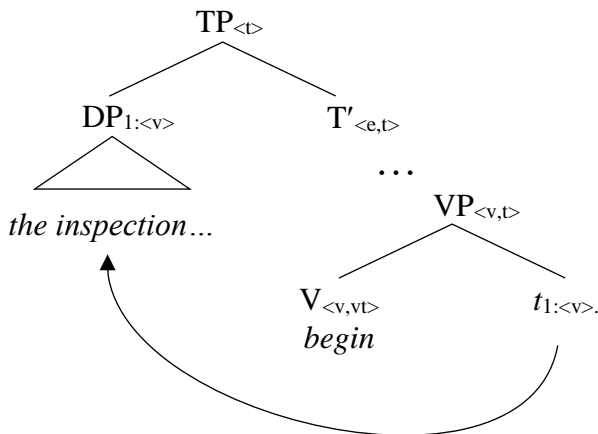
(351)



(352) $\llbracket(115)\rrbracket = \lambda e \exists e' [e' <_{initial} \iota e'' \exists x [\text{inspect}(e'') \wedge \text{Theme}(e'', x) \wedge x = \iota y [\text{factory}(y)]]] \wedge \text{Cause}(e, e') \wedge \text{Agent}(e, \text{Mary})]$

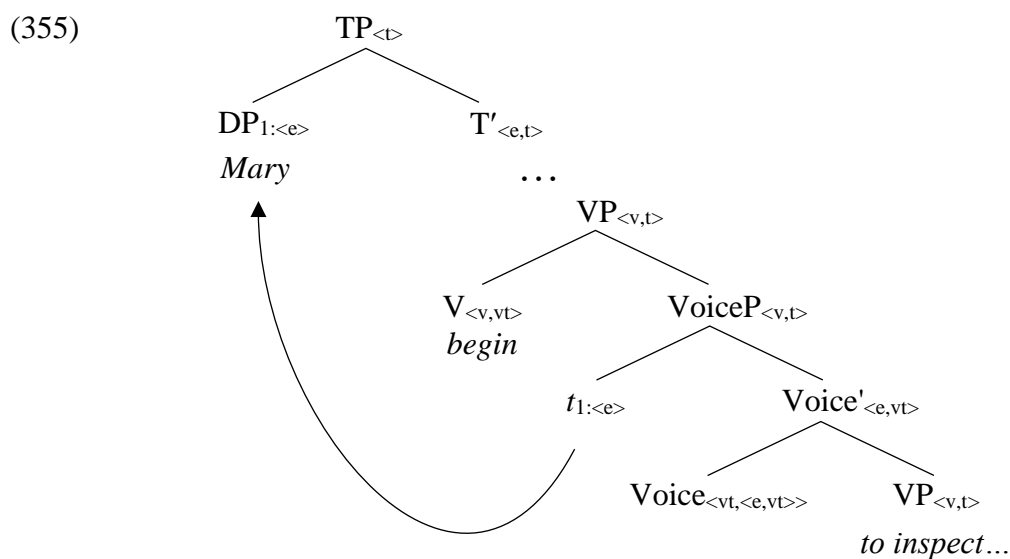
The same VP structure is present in the unaccusative counterpart of the causative construction in (115). As we see in (353) below, the first open event argument of *begin* is saturated by functional application of the compositional event nominal. However, this time the VP does not combine with CAUSE-P, nor does it combine with a projection of Voice. Instead, no external argument is introduced, and the internal argument of *begin* moves to the specifier position of TP (presumably to receive nominative case). Note that this analysis does not preclude the projection of some specifically unaccusative/anti-causative flavour of Voice, so long as an external argument is not introduced (see (Schäfer 2009) for relevant discussion). Thus, the simplistic denotation of TP in (354) (abstracting away from the semantics of Tense and Aspect) asserts the existence of the initial sub-event of the unique *inspection of the factory* event.

(353)



(354) $\llbracket(353)\rrbracket = \exists e [e <_{initial} \iota e'' \exists x [\text{inspect}(e'') \wedge \text{Theme}(e'', x) \wedge x = \iota y [\text{factory}(y)]]]$

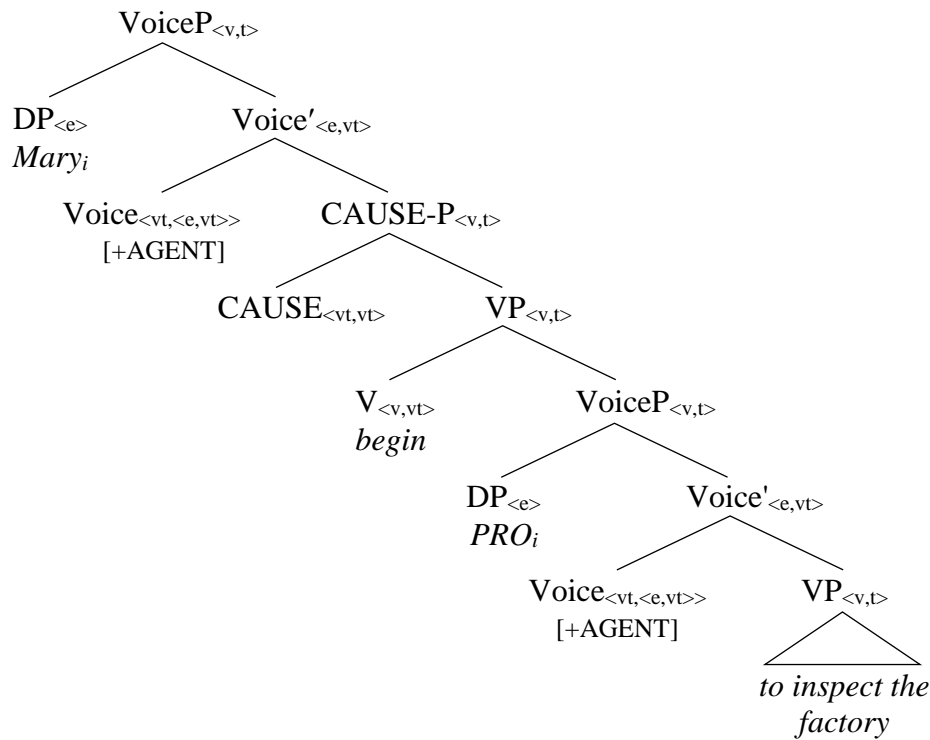
Moving on to infinitival complement constructions, we note first that utterances such as *Mary began to inspect the factory* are, by hypothesis, systematically ambiguous between control and raising (see Perlmutter 1970). We propose that the anti-causative construction in (353) translates straightforwardly into a raising analysis in non-finite complement environments, as in (355, 356). Here, the first open event argument of *begin* is restricted by the complement Voice projection. The aspectual VP does not combine with CAUSE-P or VoiceP, and as such no external argument is introduced in the matrix clause. The external argument of the VoiceP complement (introduced by an embedded agentive Voice head) then obligatorily A-moves to the specifier of matrix TP to receive nominative case.



(356) $\llbracket (355) \rrbracket = \exists e \exists e' [e <_{initial} e' \wedge \text{inspect}(e') \wedge \text{Theme}(e', \text{the factory}) \wedge \text{Agent}(e', \text{Mary})]$

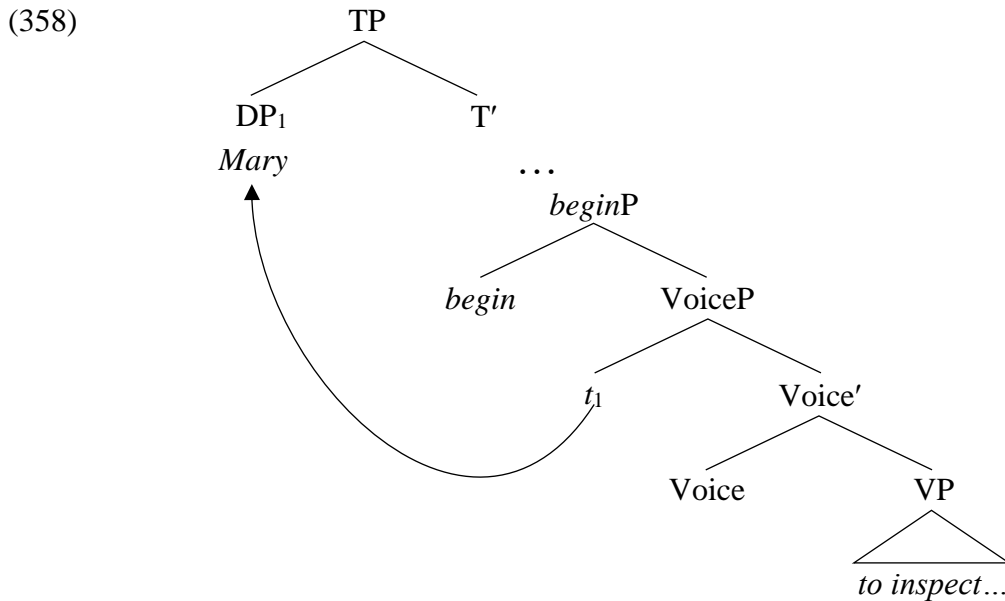
On the other hand, we propose that a control analysis of *begin* can be adequately accounted for by invoking the causative variant of aspectual predicates in (115). The relation between the matrix aspectual verb and its non-finite complement is the same in (357) below as it is in the raising construction in (355) above: the embedded VoiceP restricts the sub-domain of the first open event argument to only *inspect the factory* events. Likewise, the aspectual VP combines with the same causative projection CAUSE-P. In the control case, however, an agentive subject is projected in the specifier of matrix VoiceP, and if embedded Voice is realised, it introduces a null PRO subject that is obligatorily co-referent with the matrix subject.

(357)



It is important to note at this point that nothing in the semantics of *begin* precludes the predicate *prima facie* from participating in no-control/ECM constructions. That is, unlike previous accounts of aspectual control predicates, our semantic representation does not overtly assert or enforce any explicit relation between the matrix subject and the embedded VP. This is by design. In section 5.5.1 we will argue that the obligatory exhaustive control effects observed in aspectual constructions follow naturally from the principles of so-called ‘direct’ causation. For now, we will simply assume that the relevant obligatory EC relation is instantiated in (357) above by virtue of PRO.

Before moving on, it would be useful to reconsider the mono-clausal approach to aspectual predicates (as discussed in 5.2.2) in light of our current analysis. Consider the toy mono-clausal derivation in (358) (adapted from (Grano 2012, 2015)); *begin* appears as an independent functional projection in the inflectional layer of the matrix clause, and the matrix subject originating in the specifier of VoiceP moves across it to TP.



We contend that the (anti-)causative approach to aspectual predicates in (351-357) has one particular desirable consequence that the mono-clausal approach in (358) fails to capture without further stipulation. Specifically, our analysis adequately explains the properties of aspectual predicates irrespective of whether they select an infinitival or a nominal complement. That is, a single lexical entry can account for an aspectual predicate in both its DP-selecting aspect, as well as its infinitive-selecting counterpart. Furthermore, a single syntactic phenomenon is implicated in both the transitivity alternation in DP complement environments and the observed ambiguity between raising and control in infinitival complement constructions. For the mono-clausal view, aspectual verbs are not lexical verbs, and as such do not select nominal arguments. Thus, in order to capture the behaviour of aspectual predicates in nominal complement constructions, it would be necessary for the mono-clausal account to posit a systematic ambiguity in which an aspectual predicate is either (i) a lexical verb in the environment of a DP complement, or (ii) a functional head in the environment of a non-finite verbal complement. However, this strategy would result in system-wide redundancy, and would miss the generalisations noted throughout this chapter and in chapter 2.

Given the above analysis, aspectual predicates are like canonical raising predicates in that, in some instantiations, they are unaccusative: they do not take an external argument, and as such do not assign accusative case. However, they differ from canonical raising predicates in that they participate in the (anti-)causative alternation and may occur in transitive causative environments in which an external argument *is* projected, and accusative case *is* available. This relatively simple proposal goes a long way to accounting

for many of the syntactic observations concerning aspectual verbs in both DP and infinitival complement environments, and has a number of desirable corollaries which will be discussed in the next section.

5.5. Further predictions of the proposal

In this section we demonstrate the desirable effects associated with the proposal for aspectual predicates outlined in section 5.4. First in section 5.5.1 we argue that the effects of EC, as they exist in both the nominal and infinitival complement domains, follow naturally from principles of ‘direct’ causation. In 5.5.2 we show that this view of EC correctly derives the overt embedded subjects generalisation in both nominal objects and non-finite clauses. Then in section 5.5.3 we discuss the temporal properties of nominal and infinitival complements to aspectual predicates. Finally, in 5.5.4 we formalise the notion of specificational *with*, and furthermore provide an account for non-agentive subjects in transitive aspectual constructions.

5.5.1. Control as direct causation

There is a natural tension between the Kratzerian Voice hypothesis and the notion of inherent subject control. For the former, lexical verbs are by hypothesis dissociated both semantically and syntactically from the subjects that appear above them. For the latter, obligatory subject control is by some means encoded within the verb at the lexical level, and as such will be present in any of its possible instantiations. The question, then, is how do we encode inherent subject control into the lexical semantics of a verb when the subjects of verbs have been removed from their lexical semantics? The strategy pursued in this section will be to reduce the exhaustive control relation observed in aspectual constructions to an underlying property of the grammar. Specifically, we will appeal to the notion that simplex lexical causatives encode ‘direct’ causation (cf. Fodor 1970; Katz 1970; Bittner 1999; Wolff 2003, a.o.).

The intuition behind the notion of direct causation is neatly captured in Katz’ (1970) ‘Wild West Story’. Consider a scenario in which a sheriff brings his six-shooter to the local gunsmith for repairs, but the gunsmith’s repairs are inadequate. Later, the sheriff’s weapon jams in a gunfight, and the sheriff is shot dead. Katz notes that, while the gunsmith caused the sheriff’s death, it would be infelicitous to say that the gunsmith *killed* the sheriff (but cf. Neeleman and Van de Koot 2012). Further still, Martin and Schäfer (2014) point to

examples such as (359) and (360) to characterise the direct nature of causation in simplex causative predicates. The authors observe that (359) is true iff *the psychologists* directly manipulate *the mouse*; this utterance would be infelicitous in a context in which they coax the mouse to move by itself. Likewise, the possibility to deny (360a) and instead provide the ‘indirect’ causal chain in (360b) supports the hypothesis that simplex causatives and periphrastic causative constructions are truth-conditionally different.

(359) The psychologists moved the mouse into the other box.

(360) a. Did the psychologists move the mouse into the box?

b. No, they put some cheese in it so that the mouse moved by itself. So, they *made* it move into the box.

The alternation between direct and indirect causation is classically viewed as variable constraints on temporal adjacency. That is, simplex lexical causatives are argued to require temporal contiguity between their causing event and any subsequent events in the causal chain, thus yielding direct causation (cf. Fodor 1970; Katz 1970). This argument is supported *prima facie* by examples such as in (361a), in which simplex causatives fail to license independent temporal modification of the causing event. Periphrastic causatives are by hypothesis under no such constraint (361b).

(361) a. *John killed Bill on Sunday by stabbing him on Saturday.

b. John caused Bill to die on Sunday by stabbing him on Saturday.

However, Neeleman and van de Koot (2012) correctly point out that temporal contiguity is not always maintained in simplex causative constructions. As we see in the examples in (362) (Neeleman and Van de Koot 2012, ex. 9), the subjects of simplex causatives can, in certain contexts, be related to the subsequent result-state through a non-trivial number of mediating events in the causal chain. It is evident in these scenarios that temporal adjacency is not required.

(362) a. A kind word with the manager will no doubt open the door.

you speak to the manager → manager speaks to the doorman → doorman opens the door

b. Opening bus lanes to motorcycles will redden the streets with cyclists’ blood.

opening of bus lanes → increase of accidents → cyclists’ blood on London streets

- c. Anglican church says overpopulation may break eighth commandment.

overpopulation → poverty → theft → theft breaks eighth commandment

We furthermore submit the novel observation that aspectual (anti-)causatives are likewise compatible with the indirect causal chains exhibited in (362). That is, in (363) we find that aspectual causative predicates are conceptually compatible with non-contiguous chains of events. Note that we employ nominal complements below to avoid the possibility of a raising analysis.

- (363) a. A kind word with the manager will no doubt end this performance of Macbeth.

you speak to the manager → manager speaks to performers → performers end performance

- b. Opening bus lanes to motorcycles will begin the slaughter of London cyclists.

opening of bus lanes → increase of accidents → cyclists begin to be slaughtered

It is not our intention here to provide an account for the obviation of temporal adjacency in (362) and (363) above. We instead merely note that the fact that both simplex causatives and aspectual causatives exhibit the same obviation with non-agentive subjects suggests that the same phenomenon is at play in both constructions.

An alternative possibility would be to adopt a version of direct causation keyed to the *agency* of the causative subject relative to the causal chain (cf. Cruse 1972; Wunderlich 1997 for preliminary discussion). This view is most explicitly argued for by Piñón (2001), who proposes the notion of Agent-Cause. As defined in (364), an individual x in event e is the agent-cause of event e' iff x is the agent of e and e causes e' . Furthermore, any other event e'' within the causal chain (between events e and e') are asserted to lack an independent agent.

$$(364) \quad \text{Agent-Cause}(e, x, e') =_{\text{def}} \text{Agent}(e, x) \wedge \text{Cause}(e, e') \wedge \forall e''[\text{Cause}(e, e'') \\ \wedge (\text{Cause}(e'', e') \vee e'' = e') \rightarrow \neg \exists y[\text{Agent}(e'', y)]]$$

The effect of (364) is such that, if x is the agent of e , then for any event within the causal chain stemming from e , there can be no other agent. Returning again to Katz' Wild West story, the infelicity of *the gunsmith killed the sheriff* in the appropriate context is, under Piñón's framework, due to the intermediate agent of the shooting event that results in the sheriff's death. That is, direct causation is ruled out in this scenario precisely because the gunsmith does not constitute a licit agent-cause.

This view of direct causation is similarly problematic, however; Neeleman and van de Koot (2012) demonstrate that, given sufficient intentional force, the gunsmith can indeed constitute the subject of the lexical causative verb *kill* in the context of the Wild West story (*contra* Katz 1970). That is, in a scenario in which the gunsmith deliberately sabotages the sheriff's gun, the sentence *the gunsmith killed the sheriff* can be felicitously employed to describe the complex causal chain such that the gunsmith is an agent of a sabotage event which causes a shooting event which results in the sheriff's death. Crucially, the shooting event is conceptually free to assert an intermediate agent (e.g., the shooter), thereby violating Piñón's notion of Agent-Cause.

For the purposes of this thesis, we will adopt the definitions of linguistic causation as proposed by Kratzer (2005). Following an observation from Ginet (1990), Kratzer distinguishes between *events that cause* and *events of causing*, such that the latter but not the former contain the caused event. To illustrate, consider a scenario in which Mary drinks all the water in Bill's well, and as a result Bill's teapot is empty (that is, there is simply no water with which to make tea). In this case, Mary drinking is an *event that causes* Bill's teapot to be in an empty state. Conversely, consider a scenario in which Mary drinks all the tea in Bill's teapot, and as a result Bill's teapot is again empty. In this scenario, Mary drinking is an *event of causing* Bill's teapot to be in an empty state. In order to formalise this distinction, Kratzer provides the following definitions in (365; Kratzer 2005, ex. 61). Note that we assume here the set of events E and a causal chain C , which is a convex subset of E . Furthermore, we assume that the members of C are linearly ordered by causal dependence.⁴¹ An event in C is the maximal element of C iff that event does not cause any other events in C . Likewise, an event in C is the minimal element of C iff that event is not caused by any other event in C (Kratzer 2005: 28).

(365) a. *Events of causing other events*

An event e is an event of causing an event e' iff e is the sum of all the members of some causal chain C with maximal element e' .

b. *Events that cause other events*

An event e is an event that causes an event e' iff e is the minimal element of some causal chain C with maximal element e' .

For Kratzer, the kind of causation defined in (365a) is responsible for the so-called 'directness' of certain causative structures; any thematic participant of an *event of causing*

⁴¹ See also (Lewis 1973) on counterfactual dependence.

will similarly bear that thematic relation in any sub-event within the extended causal chain. We assume here that this same kind of causation is encoded by the two-place Cause predicate introduced by the verbal causative head in simplex (and aspectual) causative constructions. That is, the event introduced by the CAUSE head is an *event of causing*, rather than an *event that causes*.

Before moving on, we need to make an explicit assumption regarding thematic two-place predicates (i.e., Agent(e, x), Theme(e, x), Experiencer(e, x) etc.) and the relations they establish between events and individuals. Specifically, we will assume that a thematic participant x in event e is also a thematic participant in any relevant sub-events of e to the same capacity. This notion follows from the fact that thematic relations are *sum homomorphisms* with respect to the sum operation, as noted by Champollion (2010).⁴²

(366) For any thematic role θ , it holds that $\theta(e \oplus e') = \theta(e) \oplus \theta(e')$
(Champollion 2010: 33)

Take as illustration the utterance *John pushed the cart from the garage to the shed*. Furthermore, assume that the event e (*push the cart from the garage to the shed*) consists of minimally two sub-events: (i) an event e' of pushing the cart from the garage to some halfway point, and (ii) an event e'' of pushing the cart from some halfway point to the shed. Given that events are the sum of their sub-events, it follows from (366) that if John is the agent of the sum $e' \oplus e''$ in which he pushes the cart from the garage to the shed, then he is also the agent of the individual sub-events e' and e'' .

Armed with the principles above, we submit the definition in (367) as a working characterisation of obligatory exhaustive control as it exists in infinitival *try* constructions. Critically, the definition below reflects the notion that the observed exhaustive control relation is in fact an inherent semantic entailment based on the sum homomorphism of thematic roles in a causative environment.

(367) *Exhaustive control as a causative entailment*
 For any two distinct events e and e' related by a semantic *Cause* predicate, such that e is an *event of causing* e' , the Agent of e is necessarily the Agent of e' .

⁴² See (Kratzer 2003) for relevant criticism of this notion.

It should be noted that the definition in (367) describes a constraint regarding the *thematic roles* or *thematic relations* of two or more events, and is not concerned with *theta roles* (in the sense of Chomsky 1981). The correspondence between theta roles and thematic relations is a robust and controversial topic, and one which extends beyond the scope of the present work. For our purposes, it will suffice to hypothesise that a single theta position may be associated with more than one thematic role (see e.g. Parsons 1990); this is arguably the case when exhaustive control manifests into embedded unaccusatives (e.g., *John began to fall*), such that the embedded subject is interpreted as both an Agent and a Theme (for recent discussion on theta roles and their relation to thematic roles, see Carnie 2006; Champollion 2010).⁴³

Consider now the type-driven derivation of aspectual control in (357), repeated below as (368), as well as its subsequent denotation in (369). The VoiceP comes to denote the set of events *e* such that *e* is an event of causing the initial sub-event *e'* of an inspection of the factory event *e''*. Mary is furthermore asserted as the Agent of the event of causing *e*.



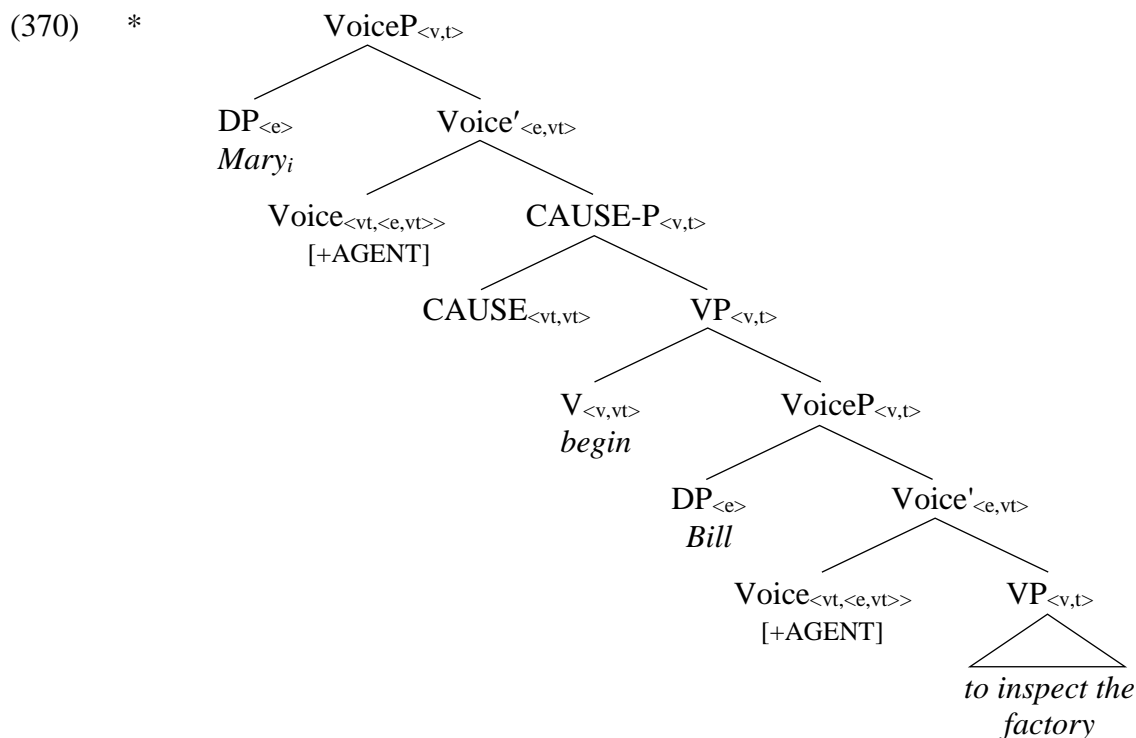
⁴³ Complementation of embedded unaccusatives is less of a contentious issue with aspectual predicates, given that they may instead instantiate an anti-causative ‘raising’ structure. However, the differentiation of *theta roles* and *thematic relations* will be necessary to account for all possible complement types available in *try* constructions in chapter 6.

$$(369) \quad \llbracket(368)\rrbracket = \lambda e \exists e' \exists e'' [\text{Cause}(e, e') \wedge \text{Agent}(e, \text{Mary}) \wedge e' <_{\text{initial}} e'' \wedge \text{inspect}(e'') \\ \wedge \text{Agent}(e'', \text{PRO}) \wedge \text{Theme}(e'', \text{the factory})]$$

The notion that Cause establishes an *event of causing* rather than an *event that causes* provides immediate purchase on the derivation of exhaustive control in aspectual control constructions. Namely, the events e and e' in (369) above are related in such a way that e is the sum of all events in causal chain C , and e' is the maximal element of C . Put plainly, Cause establishes a *parthood* relation between e and e' , such that $e' \leq e$. Because the *begin* event is wholly contained within the event of causing, it is entailed that if Mary is the agent of e , then Mary is the agent of e' by virtue of the sum homomorphism of thematic roles (see (366)). Further still, the same is partly true of the embedded event e'' . That is, due to the parthood relation instantiated between the *begin* event and its embedded event, part of the embedded event necessarily overlaps with the event of causing, of which Mary is the agent. The precise amount of e'' that is contained within e is determined by the event run-time of e' , the initial sub-event of e'' . As such, for any event e''' such that $e''' \leq e''$ and the run-time of e''' is either equal to or within the bounds of the run-time of e' , $e''' \leq e$ and $\text{Agent}(e''', \text{Mary})$.

As a consequence of this approach, we immediately derive the inherent nature of exhaustive control in aspectual constructions; the projection of an independent agent within the embedded event gives rise to a logical contradiction. Consider, for example, the illicit ECM construction in (370). We see in (371) that Mary is established as the agent of e and Bill as the agent of e'' . The existentially quantified *begin* event e' is simultaneously a sub-part of both e'' (by virtue of the lexical semantics of *begin*) and e (by virtue of Cause). Mary is the agent of e and all of its sub-events, including e' . Likewise, Bill is the agent of e'' and all of its sub-events, also including e' . A contradiction thus arises in which the *begin* event e' ends up with two distinct thematic agent arguments, thereby rendering the derivation uninterpretable.⁴⁴

⁴⁴ We assume here a principle of thematic uniqueness; see e.g. (Parsons 1990).



$$\begin{aligned}
 (371) \quad \llbracket (370) \rrbracket &= \lambda e \exists e' \exists e'' [\text{Cause}(e, e') \\
 &\quad \wedge \text{Agent}(e, \text{Mary}) \wedge e' <_{\text{initial}} e'' \wedge \text{inspect}(e'') \\
 &\quad \wedge \text{Agent}(e'', \text{Bill}) \wedge \text{Theme}(e'', \text{the factory})]
 \end{aligned}$$

Consequently, in order to avoid this contradiction, the only possible external argument of the embedded VoiceP in aspectual control constructions is a null pronoun PRO that is co-referent with the matrix subject. It thus follows that the obligatory binding of any PRO subject in this environment will be truth conditionally vacuous (cf. Wurmbrand 2001, 2002). Crucially, our analysis does not entail that *Mary* is the agent of the entirety of the embedded event, but only the relevant parts (as defined by the event run-time of the *begin* event). We will see in section 5.5.3 that this account provides a natural explanation for the entailment patterns of aspectual complements.

In sum, this section has attempted to reduce the inherent nature of exhaustive control in aspectual control constructions to principles of direct causation. The particular definition of direct causation adopted was that of Kratzer (2005), such that transitive aspectual constructions involve the projection of a Cause head that introduces an *event of causing*. The subsequent parthood relations established between the event of causing and the embedded event(s) provided an elegant solution to exhaustive control. By exploiting the fact that thematic relations are *sum homomorphisms*, we saw that any agent of the event of causing was entailed to be the agent of any of its sub-events, which included both the

begin event and any sub-events of the complement event that coincided with the event runtime of the *begin* event. As such, the projection of an independent external argument in the complement clause gave rise to a logical contradiction in which the event introduced by *begin* selects two agents. Given that aspectual constructions involving compositional event nominal complements involve the same underlying semantics and causative syntax, we successfully derive the first half of the generalisation in (90). That is, exhaustive control is entailed in event nominal complements to aspectual control verbs due to the fact that any independent overt agents give rise to a logical contradiction.

5.5.2. Overt embedded subjects

As per our analysis of exhaustive control in 5.5.1, the *overt embedded subjects* generalisation (see (92)) follows trivially in both the clausal and nominal complement domains. Beginning with clausal complements, recall from chapter 2 that overt embedded subjects are barred in English EC constructions, even when exceptional case-marking *for* is realised, as illustrated in (372) below (Grano 2012, 2015). Likewise, the inability of an exhaustively controlled clause to project an independent subject transcends the role of finiteness; the exhaustively controlled Greek finite subjunctive in (37) becomes ungrammatical with the realisation of an embedded subject (Landau 2004).

- | | | |
|----------|--|--------------------|
| (372) a. | *Mary managed (for) Bill to leave the city. | implicative |
| b. | *Mary continued (for) Bill to leave the city. | aspectual |
| c. | *Mary had (for) Bill to leave the city. | modal |
| d. | *Mary tried (for) Bill to leave the city. | <i>try</i> |

- (373) O Yanis tolmise na figi (*o Kostas)
 The Yanis dared PRT leave the Kostas
 ‘Yanis dared (*for Kostas) to leave.’

GREEK
 (Grano 2012:33-34)

In the case of aspectual control predicates, we know from our ‘direct causation’ analysis in section 5.5.1 that an overt embedded subject in the complement clause is ruled out on semantic grounds. That is, even though the compatibility of our aspectual lexical semantics and embedded VoicePs leaves open the potential for an embedded subject in the specifier

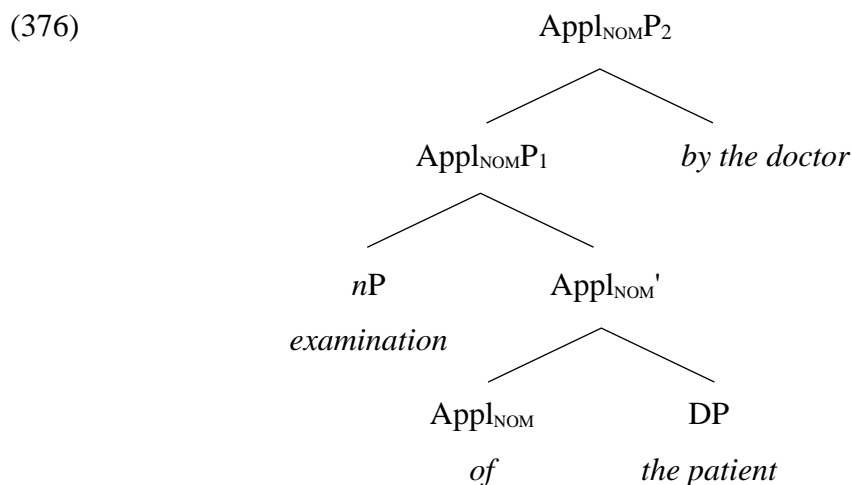
of Voice, projection of an independent subject gives rise to a logical contradiction.⁴⁵

Turning to compositional event nominal complements, we find that our account of aspectual control constructions accurately predicts the generalisation in (92), as it applies to EC predicates. Recall that compositional event nominal complements to aspectual EC predicates may not take agent-naming *by*-phrase adjuncts (see (374a,b)), nor may they realise an overt agent in the prenominal genitive position (374c). However, as in (374d), they may optionally realise a prenominal genitive that names a beneficiary/abstract possessor.

- (374) a. The public began the immediate investigation of the suspect (*by the council).
 b. The committee continued the negotiation of trade deals (*by Congress).
 c. *The president began his advisor's evacuation of the city.
(advisor = Agent)
 d. The president began his advisor's evacuation of the city.
(advisor = Beneficiary/Author/Possessor/ ...)

The behaviour of the *by*-phrase adjuncts in (374a,b) is expected, given our analysis of agent-naming *by*-phrases in chapter 4. We see in (264) that an agent-naming *by*-phrase minimally requires an event variable and asserts the agent of that event. The subsequent compositional event nominal in (268) can thus be assigned the series of semantic denotations in (269).

(375) $\llbracket by_{AG} \rrbracket = \lambda x. \lambda e. Agent(e, x)$



⁴⁵ This assumes that a non-finite clausal complement that maximally projects to VoiceP is otherwise compatible with ECM in the relevant sense. Any account of ECM that relies on higher projections in the left-periphery of the embedded clause will derive the overt embedded subjects generalisation trivially by structural means.

- (377)a. $\llbracket \text{AppI}_{\text{NOM}}' \rrbracket = \lambda e. \exists x [\text{Theme}(e, x) \wedge x = \iota y[\text{patient}(y)]]$
 b. $\llbracket \text{AppI}_{\text{NOM}}\text{P}_1 \rrbracket = \lambda e. \exists x [\text{examine}(e) \wedge \text{Theme}(e, x) \wedge x = \iota y[\text{patient}(y)]]$
 c. $\llbracket \text{AppI}_{\text{NOM}}\text{P}_2 \rrbracket = \lambda e. \exists x [\text{examine}(e) \wedge \text{Theme}(e, x) \wedge x = \iota y[\text{patient}(y)]$
 $\quad \quad \quad \wedge \text{Agent}(e, \iota z[\text{doctor}(z)])]$

Consider now the ungrammatical aspectual construction **The nurse began the examination of the patient by the doctor*, and its logical form in (378). The utterance comes to denote an event of causing of which *the nurse* is the agent, and the maximal element of the event of causing is the initial sub-event of the unique *examination of the patient* event, of which *the doctor* is the agent.

$$(378) \quad = \exists e \exists e' \exists e'' [\text{Cause}(e, e') \wedge \text{Agent}(e, \text{nurse}) \wedge e' <_{\text{initial}} \iota e'' \exists x [\text{examine}(e'') \\ \wedge \text{Theme}(e'', x) \wedge x = \iota y[\text{patient}(y)] \wedge \text{Agent}(e'', \text{doctor})]]]$$

Thus, the same logical contradiction that arises in clausal complement environments arises in the nominal domain as well. Specifically, given that Cause instantiates an *event of causing*, and as such *e* contains *e'*, the nurse in (378) is necessarily the agent of *e'* by virtue of the fact that thematic relations are sum homomorphisms. Likewise, the parthood relation between *e'* and *e''* is such that *e''* contains *e'*, and as such the doctor is *also* necessarily the agent of *e'* for the same reasons. The fact that *e'* thus has two distinct agents in the above example violates the principle of thematic uniqueness, thereby causing the derivation to crash.

A similar narrative can be constructed for the behaviour of prenominal genitives in compositional event nominal complements, as observed in (374c,d). Recall from chapter 4 that our analysis of prenominal genitives made use of Higginbotham's (1983) notion of the unspecified *R* relation. Specifically, we assumed that the interpretation of *R* is contextually determined, and that this interpretative variability corresponds with a variation in the spell-out of the *R* predicate. In the environment of the compositional event nominal in (262a), *R* is by hypothesis ambiguous between an argumental and an ownership interpretation. If the interpretation is one of ownership, *R* will spell out the possessive Poss predicate, as in (262b). Likewise, in argumental interpretations, *R* will spell out the thematic Agent relation (262c).

- (379) a. \llbracket His advisor's evacuation of the city \rrbracket
 $= \iota e[\text{evacuate-the-city}(e) \wedge R(e, \text{advisor})]$
- b. If R =ownership, then $\text{Poss}(e, \text{advisor})$
- c. If R =argument, then $\text{Agent}(e, \text{advisor})$

It immediately follows that, on any occasion in which R is spelled out as the thematic Agent relation, the expected contradiction arises in which the aspectual sub-event realises two distinct agent arguments. Furthermore, the ability of the prenominal possessor to licitly denote an abstract possessor or beneficiary follows naturally from an ownership interpretation of R . That is, in a context of ownership, R is spelled out as Poss . Given that Agent and Poss are two distinct thematic relations, no such contradiction arises.⁴⁶

Thus, the account of aspectual predicates proposed in section 5.4 combined with our analysis of exhaustive control in 5.5.1 yields without further stipulation the *overt embedded subjects* generalisation as it applies to aspectual EC predicates with clausal complements. Furthermore, we successfully derive the generalisation in (92), such that overt embedded *agents* are specifically barred in event nominal complements to aspectual EC predicates. In each case, it was found that an overt agent in the complement yields a logical contradiction, in which the principle of thematic uniqueness is violated.

5.5.3. Temporal properties of infinitival and nominal complements

Like the nature of exhaustive control, the obligatory simultaneity of clausal and nominal complements emerges naturally from our aspectual semantics. However, we will see that the way in which this property emerges in these variable environments is necessarily distinct. Beginning with non-finite complements, we adopt the relatively standard assumption that the role of aspect (encoded in the functional Aspect projection) is to existentially bind the event variable and relate the event run-time to a reference time t (type $\langle i \rangle$), from the domain of time intervals D_i ; cf. Pancheva and Stechow 2004 and references cited therein). We furthermore adopt the semantics for perfective aspect as defined in (380).⁴⁷ As such, perfective aspect encodes proper containment of the event time within the reference time, and as such entails event completion. Upon merging with an appropriate

⁴⁶ We assume here that Poss may yield either an abstract possession/authorship interpretation or a beneficiary reading. An alternative analysis would hold that the beneficiary interpretation only arises in a benefactive context (e.g., if $R(e, x)$ is spelled out as $\text{Beneficiary}(e, x)$). No contradiction arises under this account.

⁴⁷ For the sake of simplicity, we focus on perfective aspect rather than imperfective.

VoiceP, an AspectP encoding the perfective in (380) will come to denote a predicate of times (type $\langle i,t \rangle$).

$$(380) \quad \llbracket \text{PERFECTIVE} \rrbracket = \lambda P_{\langle v,t \rangle} . \lambda t_i . \exists e [P(e) \wedge \tau(e) \subset t]$$

As a predicate of times, the denotation of any perfective AspectP is compositionally incompatible with our aspectual predicates; as per section 5.4.2, the open event argument of aspectual predicates may only be saturated by an event *per se* (type $\langle v \rangle$), or restricted by a predicate of events (type $\langle v,t \rangle$). We therefore predict that any functional auxiliaries that by hypothesis occur higher than Aspect (i.e., ProgressiveP, PerfectP, etc.) cannot be embedded beneath an aspectual predicate.⁴⁸ We see in (381) that this prediction is borne out.

- (381) a. *John began to be running the London marathon.
 b. *Mary continued to have inspected the factory.

Furthermore, the *tense mismatch* generalisation (Landau 2000, 2004) follows naturally from the necessarily reduced size of the clausal complement. We assume that temporal modifiers such as *yesterday* restrict the reference time of a given predicate of times, as in (382) below.

$$(382) \quad \llbracket \text{yesterday} \rrbracket = \lambda P_{\langle i,t \rangle} . \lambda t . P(t) \wedge t \subseteq \text{yesterday}$$

Recall that the nature of the aspectual predicate ensures that any non-finite complement will be maximally a projection of Voice (type $\langle v,t \rangle$), and as such will never denote a predicate of times. We therefore predict that the only predicate of times available to temporal modifiers such as *yesterday* in (382) is that of the matrix clause. Thus, the ungrammaticality of (383a) results from the contradiction that arises in (383b), in which two temporal modifiers restrict the matrix reference time to two mutually exclusive time intervals.

⁴⁸ We assume here that the progressive auxiliary *be* occurs as a modal operator above the aspectual projection (in the sense of von Stechow 2009).

(383)a. *Yesterday, John began to run tomorrow.

- b. = $\lambda t. \exists e \exists e' \exists e'' [\text{Cause}(e, e') \wedge \text{Agent}(e, \text{John}) \wedge e' <_{\text{initial}} e'' \wedge \text{run}(e'') \wedge \text{Agent}(e'', \text{PRO}) \wedge \tau(e) \subset t \wedge t \subseteq \text{yesterday} \wedge t \subseteq \text{tomorrow}]$

This analysis does not, however, extend wholesale to the domain of nominal complementation. That is, according to our analysis of compositional event nominalisations in chapter 4, nominals do not contain a projection of aspect, and thus should *never* permit independent temporal modification. This is of course not the case; event nominalisations are free to realise an independent temporal modifier in non-EC contexts (e.g., *Today, John thought about the inspection of the factory last week*). Furthermore, we observe in (384) that independent temporal modification is not isolated to event-denoting noun phrases (as in (384a)). We see in (384b,c) that purely referential nominals may likewise realise a post-nominal temporal modifier that conflicts with a temporal modifier outside the nominal (within the clause).

(384)a. [The inspection of the factory yesterday] got me fired today.

b. [That slice of pizza last Friday] made me sick all Saturday.

c. Today I remembered [the man yesterday].

It is argued by Enç (1981, 1986) that the interpretation of noun phrases is temporally independent of the clause in which they appear. Enç furthermore proposes that – like verbs – nouns must be provided with temporal arguments. This proposal is adopted and expanded in a series of works by Lecarme (1996, 1999, 2004, *et seq.*) who argues that the nominal system makes available a time argument at a nominal equivalent to Tense, which is later closed off by a nominal temporal operator located in the DP layer.⁴⁹

In order to avoid a prolonged investigation of a tangential issue, we will instead assume that the temporal properties of the DPs in (384) are introduced directly by the temporal modifier, or more accurately, the concealed relative clause in which the modifier occurs. Disregarding the precise derivation of relative clauses, we assume that (reduced) relative clauses minimally involve lambda-abstraction of an argument variable. Furthermore, we assume that any reduced relative involving the temporal modifier *yesterday* minimally contains a projection of Aspect. As such, we provide in (385) the

⁴⁹ This is an oversimplification of a complex issue, and one that is largely orthogonal to the claims made here. Crucially, we will see that simultaneity is logically entailed irrespective of any one particular analysis of nominal temporal reference.

logical form of a reduced relative containing a temporal modifier in the environment of an event NP. Here, lambda-abstraction of an event variable renders the clause a predicate of events; this is in line with Heim and Kratzer's (1998) claim that relative clauses denote predicates. Perfective aspect restricts the run-time of e to a proper subset of t , and the modifier subsequently restricts t to *yesterday*.⁵⁰

$$(385) \quad \llbracket \text{REL yesterday ...} \rrbracket = \lambda e \exists t [\tau(e) \subset t \wedge t \subseteq \text{yesterday}]$$

As a predicate of events, the temporal relative clause is free to combine with a compositional event NP by means of predicate modification.

Consider now the examples in (386); the ungrammaticality of (386a) arises from a logical contradiction in (386b). That is, the event run-time of e is restricted to reference time t , while the event run-time of e'' is restricted to the existentially quantified time t' contained within the reduced relative. Further still, the temporal modifier *yesterday* restricts the reference time of matrix aspect t to the appropriate 24-hour period that constitutes yesterday. Likewise, the temporal modifier *tomorrow* restricts the reference time t' to the appropriate 24-hour period that constitutes tomorrow. Given that e' is a sub-event in both e and e'' , a contradiction thus arises in which the run-time of e' is simultaneously restricted to both *yesterday* and *tomorrow*. Thus, the generalisation that nominal complements to aspectual EC predicates enforce simultaneity (see (275)) arises as an emergent property of our treatment of aspectual verbs (see also Wurmbrand 2014; Grano 2017 for similar conclusions).

(386) a. *Yesterday, John began the examination of the patient tomorrow.

$$\begin{aligned} \text{b.} \quad &= \lambda t. \exists e \exists e' [\text{Cause}(e, e') \wedge \text{Agent}(e, \text{John}) \wedge e' <_{\text{initial}} e'' [\text{examine}(e'') \\ &\quad \wedge \text{Theme}(e'', x) \wedge x = \iota y [\text{patient}(y)] \wedge \exists t' [\tau(e'') \subset t' \wedge t' \subseteq \text{tomorrow}]] \\ &\quad \wedge \tau(e) \subset t \wedge t \subseteq \text{yesterday}] \end{aligned}$$

Finally, we propose that the apparent imperfective properties of *begin* fall out of our analysis for free, without having to appeal to the semantics of the progressive (cf. Condoravdi 2009; Landau 2015). In (368), Mary is the agent of e and its sub-event e' , and subsequently is the agent of any sub-events of e'' that coincide with the event run-time of

⁵⁰ For various analyses regarding the internal composition of relative clauses, see (Chomsky 1965; Schachter 1973; Vergnaud 1974; Heim 1987; Kayne 1994; Grosu and Landman 1998; Sauerland 1998; Bianchi 2000, among many others).

e'. The fact that the embedded non-finite complement cannot project above VoiceP ensures that the only event time that will be located relative to the reference time will be that of the *event of causing*, and its relevant sub-events (including the *begin* event *e'*, see section 5.5.3 for detailed discussion on this point). As such, we predict that the only parts of the embedded event *e''* that will be entailed to completion will be those sub-events that coincide with the event run-time of the *begin* event. This prediction is borne out in (387); the aspectual construction in (387a) does not entail the completion of the embedded event in (387b). This same observation holds for aspectual predicates which pick out the final sub-event of the embedded event (as in (388)), or some intermediate sub-event (389). These observations hold despite the fact that in each case the embedded predicate denotes a telic accomplishment (in the sense of (Vendler 1957)).

(387) a. Mary began to paint the wall.

b. \nRightarrow Mary painted the wall.

(388) a. Mary stopped painting the wall.

b. \nRightarrow Mary painted the wall.

(389) a. Mary continued painting the wall.

b. \nRightarrow Mary painted the wall.

One apparent counterexample to the above claim comes from the aspectual predicate *finish*, which does seem to entail the completion of the embedded event in question (e.g., *Mary finished painting the wall = the wall is painted*). We argue that the telic nature of *finish* constructions does not originate in the embedded infinitive, but instead comes from a [+telic] property encoded in the verb itself. This is most saliently demonstrated with embedded intransitive activity predicates. To illustrate, we see in (390a) that the intransitive activity verb *sweep* permits modification by the atelic aktionsart modifier *for five minutes*, but not the telic modifier *in five minutes*. This same paradigm is observed when we embed *sweep* beneath the aspectual predicate *stop* in (390b). However, when *sweep* is embedded under *finish*, the resulting construction is obligatorily telic (390c).

(390) a. John swept (for five minutes/*in five minutes).

b. John stopped sweeping (for five minutes/*in five minutes).

c. John finished sweeping (in five minutes/*for five minutes).

Critically, the aktionsart modifiers in (390b,c) do not modify the time of the embedded event, but instead modify the time of the sub-event picked out by the aspectual verb. For instance, the only interpretation available in (390b) is that the *stopping* lasted for five minutes, not the *sweeping*. Given the observations above, we contend that *finish* does not constitute a *bona fide* counterexample to our claim that aspectual predicates cannot entail the completion of their infinitival complement. Instead, *finish* carries a unique [+telic] property which forces a telic interpretation of the final sub-event of the selected event.

Let us now reconsider Landau's (2015) account of this same entailment pattern (326) (repeated below as (391)). The use of degree variables here ensures that, in all worlds $w' \in \text{IN}_w$ – all possible worlds that follow the natural course of events from w – the embedded property may progress to a higher degree. In the scenario in (387), if Mary begins to paint the wall in w , then in all worlds w' that follow the natural course of events from w , Mary paints the wall to a greater degree in w' .

$$(391) \quad \llbracket \text{begin} \rrbracket^{w,g} = \lambda P_{\langle d, \text{e}, \text{st} \rangle} . \lambda d' . \lambda x . \lambda e' . P(d', x, e') = 1 \text{ in } w \wedge \text{Cause}(x, e') \text{ in } w \wedge \\ \exists \langle e'', w', d'' \rangle [w' \in \text{IN}_w \wedge e' \subset e'' \wedge d' < d''] , P(d'', x, e'') = 1 \text{ in } w'.$$

The problem with Landau's account here is that *begin* constructions are perfectly acceptable in a scenario in which some higher degree of the embedded property is rendered explicitly impossible. For example, consider a context in which Mary begins to paint a wall that has been previously layered with some magical paint repellent, and as such paint will never stick to this wall. Furthermore, assume that everyone including Mary knows this. According to (391), this scenario should minimally cause a level of degradation in the resulting *begin* construction, since the nature of a greater degree of painting the wall is difficult to conceive of if paint is unable to adhere to the wall in question. However, we see in (392) that *begin* constructions of this sort are completely unmarked, even when the impossibility of a greater degree is made overt.

- (392) a. CONTEXT: Everyone knows that it is impossible to paint this wall.
 b. Mary began to paint the wall.

One potential strategy with which to rescue the intentional view of aspectual predicates here is to assert that, in this particular scenario, it is indeed the natural course of events that

paint *not* adhere to the wall, given the state that the wall is in. As such, all possible worlds that follow the natural course of events from the actual world ($w' \in \text{IN}_w$) are those worlds in which the wall does not get painted. In this case, any notion of ‘greater degree’ of the wall being painted could presumably be valued relative to the impossibility of the task in these inertia worlds. However, this strategy must likewise contend with the apparent infelicity of the progressive form in this same scenario; we see below that the context in (393a) renders the progressive construction in (393b) marginal at best.

(393) a. CONTEXT: Everyone knows that it is impossible to paint this wall.

b. #Mary was painting the wall.

In contrast, the purely extensional account of aspectual control verbs pursued in this chapter presents a natural explanation for the observations in (392). Namely, our account of *begin* singles out only those sub-events of the embedded event that coincide with the run-time of the initial sub-event introduced by *begin*. As such, the (im)possibility of future sub-events escapes the truth-conditional purview of the aspectual predicate.

In sum, the analysis of aspectual predicates pursued in this chapter adequately explains the aspectual and temporal properties of aspectual constructions across complement domains. We first showed that infinitival complements projecting up to and beyond AspectP were type-theoretically incompatible with our aspectual semantics. This observation made a number of correct predictions, including the fact that progressive and perfect morphology cannot be embedded beneath aspectual verbs. Furthermore, this notion provided a natural explanation for the simultaneity of infinitival complements to aspectual predicates; the only reference time available in such constructions is that of the matrix Aspect. A related but distinct account was required for nominal complements; we showed that any nominal reference time is likewise incompatible with independent temporal modifiers in the environment of an aspectual predicate. Finally, we provided a simple and effective solution to the apparent imperfective qualities of aspectual verbs.

5.5.4. Eventive subjects and specificational *with*

In this section we will briefly address transitive aspectual constructions which take non-agentive subjects, such as that in (394). In this particular case, the subject of *start* is the compositional event nominalisation *the assassination of Franz Ferdinand*, which represents an event *per se* (type $\langle v \rangle$).

(394) The assassination of Franz Ferdinand started the First World War.

For Perlmutter (1970), the transitive aspect of aspectual predicates in which the verb selects a direct object DP is indicative of an underlying control analysis. By the same token, however, the absence of agency and animacy in the external argument is arguably indicative of an underlying raising analysis. Thus, the example in (394) presents a puzzling discrepancy in the empirical paradigm surrounding the raising/control ambiguity in aspectual constructions.

We propose that this apparent discrepancy disappears on the causative analysis of aspectual predicates developed in section 5.4. Specifically, we appeal to the uncontroversial empirical fact that there is no obligation for the external argument of a causative construction to be agentive/animate. For example, we see in (395a,b) that inanimate instruments constitute licit external arguments to simplex causative verbs. Likewise, while events *per se* are neither agentive nor animate, they too may be realised as external arguments of those same simplex causative predicates (as illustrated in (395c,d)).⁵¹

- (395) a. The hammer broke the window.
b. The sun melted the snow.
c. The swinging of the hammer broke the window.
d. The rising of the sun melted the snow.

Cause-denoting eventive subjects are likewise attested in a number of non-English languages, including Brazilian Portuguese (396a) and Mandarin Chinese (396b). These examples can be accounted for straightforwardly on our analysis, so long as the eventive subject in question can be construed as a causer in the relevant sense.

- (396) a. A disputa começou a guerra
The dispute began the war
'The dispute began the war.'

⁵¹ Mechanically, we allow non-agentive, inanimate external arguments to be introduced above CAUSE-P by a Voice projection that is minimally [-AGENT, -ANIMATE]. Alternatively, we could posit a host of different Voice flavours, such as Voice_[+INSTRUMENT] and Voice_[+NATURAL-FORCE] (for the notion of 'natural-force', see (Piñón 2001)). Given that our interest in non-agentive subjects is primarily pre-theoretical, we will avoid making any structural generalisations here (see also Reinhart 2000).

- b. Guǎngdǎo hōngzhà jiéshùle dì èr cì shìjiè dàzhàn
 Hiroshima bombing end-LE CARD 2 time world war
 ‘The bombing of Hiroshima ended the second world war.’

Returning now to the notion of ‘specificational *with*’, compare the causative construction in (394) with the specificational constructions in (397). Recall that these data constitute apparent counter-examples to our claim that aspectual verbs are truly (anti-)causative, as per 5.3.2; simplex causative predicates cannot realise instrumental *with*-PPs.

- (397) a. The investigation began with the inspection of the factory.
 b. The unveiling of the new hospital began with the ceremonial cutting of the ribbon.

If these *with*-PP adjuncts overtly denote the external, instrumental causer of the corresponding anti-causative clause, then these examples pose a non-trivial problem to our (anti-)causative analysis of aspectual predicates. Thankfully, this is not the case; we can demonstrate that the *with*-PPs that appear in intransitive aspectual constructions do not realise the external/instrumental causer of the aspectual event. To illustrate, consider the context in (398a). In this scenario, example (398b) is judged as true; *the assassination of Franz Ferdinand* constitutes a licit causer in this context. However, example (398c) in which *the assassination* appears in a *with*-PP is judged as false in this same context. Finally, example (398d) is judged as true, with the *with*-PP adjunct now occupied by *the declaration of war*.

- (398) a. CONTEXT: The Archduke Franz Ferdinand was assassinated on June 28th 1914. After escalating tension, Austria-Hungary declared war on Serbia on July 28th.
 b. The assassination of Franz Ferdinand started the First World War. (True)
 c. The First World War started with the assassination of Franz Ferdinand. (False)
 d. The First World War started with the declaration of war by Austria-Hungary. (True)

In order to unpack these data, we need to understand relations between *the First World War* and the various other events described in this scenario. As mentioned above, *the assassination of Franz Ferdinand* represents a potential causer, hence its realisation as the external argument of the transitive causative construction in (398a). On the other hand, *the*

declaration of war by Austria-Hungary does not intuitively describe a causer, but instead seems to explicitly describe the nature of the initial sub-event of the First World War.

We therefore submit that these *with*-PPs are specificational in nature, rather than instrumental: they specify the aspectual sub-event in question. That is, the adjunct in example (398c) specifies the initial sub-event of the *First World War* event. The role of the *with*-PP then is to identify the initial sub-event with the event denoted by *the declaration of war by Austria-Hungary*. We provide a semantic denotation for specificational *with* in example (399a), while (399b) provides the denotation of the VP in (398c).

- (399) a. $\llbracket \text{with}_{spec} \rrbracket = \lambda e'. \lambda P_{\langle v,t \rangle}. \lambda e. P(e) \wedge e = e'$
- b. $\llbracket [_{VP} [_{VP} \text{begin} [_{DP} \text{WWI}]] [_{PP} \text{with} [_{DP} \text{the declaration of war by A-H}]]] \rrbracket$
 $= \lambda e. e <_{initial} \iota e' [\text{WWI}(e')] \wedge e = \iota e'' [\text{declaration-of-war}(e'')]$
 $\wedge \text{Agent}(e'') = \text{A-H}$

The denotation of specificational *with* in (399a) provides immediate purchase on why (398c) is judged false. Given the context in (398a), we know that the First World War started on July 28th, when Austria-Hungary declared war on Serbia. We are also told that the assassination of Franz Ferdinand occurred a month earlier on June 28th. Example (398c) is therefore false due to the fact that the *with*-PP identifies the initial sub-event of the First World War with an event that occurred one month prior to its onset.

5.6. Conclusion

In this chapter, we have developed a theory of aspectual predicates that can account for the behaviour of aspectual verbs in both nominal and infinitival complement environments. We began by explicitly investigating the claim in (Pustejovsky and Bouillon 1995) that aspectual verbs are (anti-)causative, and concluded that the relevant diagnostics supported this hypothesis. We then pursued a radically simplified semantic analysis of aspectual predicates, such that a single lexical entry could account for both infinitival and nominal complementation. To this end, we proposed that aspectual predicates select for an event *per se*, and that infinitival complements combine via the compositional method *Restrict*. Finally, we demonstrated that, when combined with an (anti-)causative syntax, our framework could account for the raising/control ambiguity present in the domain of infinitival complements.

The effects of our proposal were numerous. First, we derived the exhaustive control relation for free from the principle of direct causation. Specifically, we adopted the definition of direct causation from Kratzer (2005), and found that as a consequence of this definition, the agent of the matrix event was entailed as the agent of (the relevant sub-events of) the embedded event. We furthermore found that the *overt embedded subjects* generalisation followed naturally from our account in both the nominal and infinitival domains; any overt agent in the embedded event resulted in a logical contradiction. Similarly, we were able to account for the aspectual and temporal properties of both infinitival and nominal complements by virtue of our lexical semantics. Finally, we demonstrated that our (anti-)causative account made a number of unique and ultimately correct predictions regarding the nature of non-agentive subjects in transitive aspectual constructions, and furthermore provided a formalisation of a unique specificational *with* preposition.

6. INHERENT CONTROL: A DUALITY IN THE SEMANTICS OF *TRY*

6.1. Introduction

In chapter 5 we provided a uniform account of aspectual predicates in nominal and infinitival complement environments. This chapter will attempt to do the same for the exhaustive control predicate *try*. Specifically, we will offer a variation on recent semantic analyses of *try* such that the predicate encodes two separate internal arguments: an *action* and an *intention*.⁵² This distinction is based primarily on our observation in chapter 2 concerning the entailment pattern of *try* in different complement environments, as exemplified in (400). In example (400a), we find that in the environment of a compositional event nominal complement, *try* entails its complement. Conversely, in (400b) we observe that *try* does not entail its complement if said complement is a non-finite clause. We will refer to these different readings as the *action* and *intention* reading, respectively.

- (400) a. The government tried the abolition of workers' rights. *action*
⇒ The government abolished workers' rights.
- b. The government tried to abolish workers' rights. *intention*
⇏ The government abolished workers' rights.

In section 6.2 we provide a brief overview of an arguably related phenomenon: the behaviour of the predicate *explain* and the so-called *explanans* vs. *explanandum* distinction. Then in section 6.3 we consider evidence for both an aspectual as well as an intentional component in the meaning of *try*, specifically in light of our observations concerning *try* in nominal complement constructions. Furthermore, we will discuss and ultimately dismiss a number of contemporary accounts of these observations, starting with Sharvit (2003). In section 6.4 we provide a novel analysis for *try* that accounts for the similarities of infinitival and nominal complement constructions, as well as the different entailment patterns exhibited in these environments. In 6.5 we demonstrate that the analysis put forward in section 6.4 correctly derives the key generalisations identified in chapter 2 in both nominal and infinitival environments. In section 6.7 we observe that our account has some desirable

⁵² Despite an overwhelming desire to invoke a system of cryptic Latinate taxonomy, we will instead continue the terminological tradition of Grano (2017a), who explicitly notes that the meaning of *try* contains both an *action* and *intention* component. However, our hypothesis will make the stronger claim that both of these components are realised as separate arguments of the predicate.

consequences concerning the empirical entailment patterns of gerundive complements to *try*, and we furthermore discuss some structural implication of this observation. We conclude in section 6.7.

6.2. A (very) brief background on *explain*

Before we present our analysis for *try*, it would be useful to discuss a separate but relevant diagnostic property of the predicate *explain*. It is observed in Pietroski (2000) that linguistic expressions involving the verb *explain* followed by a DP are truth-conditionally distinct from expressions involving *explain* followed by a propositional CP. Consider, for example, the data in (401); the CP complement example in (401a) does not entail the DP complement construction in (401b), and vice versa. Furthermore, we interpret the CP in (401a) as the content of the officer's explanation. Conversely, the DP in (401b) denotes the thing for which the officer is providing an explanation (in this case, the content of his explanation may be that the sewers are flooding). We will refer to this property as the *explanans* vs. *explanandum* distinction.⁵³

- (401) a. The officer explained that the road was closed. *explanans*
 b. The officer explained the fact that the road was closed. *explanandum*

For Pietroski, the observed distinction in (401) is indicative of an underlying variation in the thematic relation between the predicate and its argument. That is, Pietroski proposed that *explain* assigns a different thematic role to its complement, depending on the syntactic status of said complement. Employing a Neo-Davidsonian event semantics (cf. Parsons 1990), Pietroski argued that propositional CPs such as that in (401a) stand in a CONTENT relation with the *explain* event, as in (402a). In contrast, DPs such as in (401b) combines as the THEME of explaining (see (402b)).

- (402) a. $\exists e [\text{explain}(e) \wedge \text{Agent}(e, \text{officer}) \wedge \text{Content}(e, \text{that the road was closed})]$
 b. $\exists e [\text{explain}(e) \wedge \text{Agent}(e, \text{officer}) \wedge \text{Theme}(e, \text{the fact that the road was closed})]$

A recent proposal by Elliot (2016) challenges Pietroski's idiosyncratic account of *explain*,

⁵³ The distinction between *explanans* vs. *explanandum* is a vast and widely debated topic in the relevant philosophy of science literature (cf. Hempel and Oppenheim 1948). Here we will limit ourselves to the relevance of the distinction in the scope of linguistic expression.

and instead argues that the distinction in (277) is part of a greater phenomenon of so-called ‘substitution failures’ (see i.e., Prior 1971; King 2002; Pryor 2007, a.o.). Elliot provides an analysis such that propositional CPs are not true arguments of the predicate *explain*, but are rather predicate modifiers (in the sense of Heim and Kratzer 1998). This proposal builds off of recent work by Kratzer (2006) and Moulton (2009) which holds that *that*-CPs do not denote propositions, but instead denote properties of individuals with propositional content. Consider the denotation of the CP *that the road is closed* in (403).

$$(403) \quad \llbracket \text{that the road is closed} \rrbracket = \lambda w. \lambda x. \text{CONT}(w)(x) = \lambda w'. \text{road closed in } w'$$

The LF in (403) contains a function *CONT* which takes as its input a world argument w and an individual x , and returns the content of x in w as the proposition described in the embedded *that*-clause. One main motivator for the analysis in (403) comes from the ability of *that*-clauses to compose with proposition-denoting DPs, such as *rumour* in (404a) (cf. Moltmann 2013).⁵⁴ As illustrated in (404b), composition between the propositional DP and the property-denoting CP may proceed via predicate modification (Elliott 2016, ex. 17, 18).

$$(404) \text{a. } \llbracket \text{rumour} \rrbracket = \lambda w. \lambda x. \text{rumour}_w(x)$$

$$\text{b. } \llbracket \text{the rumour that the road is closed} \rrbracket = \lambda w. \lambda x [\text{rumour}(x)$$

$$\quad \wedge \text{CONT}(w)(x) = \lambda w'. \text{road closed in } w']$$

Armed with the property view of *that*-clauses, Elliot provides an analysis of *explain* such that the *explanans* vs. *explanandum* distinction boils down to differing methods of semantic composition. Note that Elliot follows Lasnik (1995) in assuming that events and individuals are both members of the domain of entities (D_e), and are therefore both type $\langle e \rangle$. As such, the event variable introduced by *explain* now presents a licit target for predicate modification by the propositional CP, which denotes a property of individuals. We end up with the logical form in (405) for the *explanans* reading; the *that*-clause modifies the *explain* event and asserts its content as the proposition described by the CP.

$$(405) \quad \llbracket \text{the officer explained that the road is closed} \rrbracket =$$

$$\lambda w. \exists e [\text{explain}(e) \wedge \text{Agent}(e, \text{officer}) \wedge \text{CONT}(w)(e) = \lambda w'. \text{road closed in } w']$$

⁵⁴ Note that Elliot (2016) here assumes the intentional semantics of (von Stechow and Heim 2011), such that all predicates take a world argument which is realised by a pronominal world element. We abstract away from world pronouns here, as they have little bearing on Elliot’s account of *explain*.

Moving on to the *explanandum*, Elliot exploits the kind of composition observed above in (404), such that DP complements of *explain* are propositional in nature, and therefore may be modified by content-denoting CPs. As such, the logical form in (406) accounts for the *explanandum* reading, in which the CP expresses the content of the DP, and the DP subsequently combines as the Theme of the explaining event.

$$(406) \quad \llbracket \text{the officer explained the fact that the road is closed} \rrbracket = \\ \lambda w. \exists e [\text{explain}(e) \wedge \text{Agent}(e, \text{officer}) \wedge \text{Theme}(e, \iota x [\text{fact}(x) \\ \wedge \text{CONT}(w)(x) = \lambda w'. \text{road closed in } w'])]]$$

We have thus reviewed two different methods of explaining the complementation facts concerning the predicate *explain*. For Pietroski (2000) both CPs and DPs are semantic arguments of the predicate, and differ only in the thematic function which relates them to the explaining event. On the other hand, Elliot (2016) provides an analysis in which only DP complements constitute semantic arguments of the verb; CPs instead modify the underlying explaining event and express the content of said event.⁵⁵ While the syntax/semantics of *explain* does not factor directly into our analysis, we will draw a number of similarities between the *explanans* vs. *explanandum* distinction and our semantic treatment of *try*. Furthermore, in section 6.4 we will consider two separate logical possibilities concerning the arguments of *try*: (i) the hypothesis that both the *action* and *intention* arguments of *try* are encoded in its lexical semantics, and (ii) the hypothesis that one or both of its arguments are introduced externally to the verb. Based on the behaviour of *try* in various complementation environments, we will ultimately reject (i) in favour of (ii). Specifically, we will argue that DP complements are encoded in the lexical semantics of *try*, while non-finite clauses merge by means of *predicate modification*.

6.3. Previous analyses

In this section we will consider in detail contemporary proposals in the syntactic/semantic literature that provide a treatment for the predicate *try*. In particular, we will focus on those analyses which recognise both the aspectual *action* element in the meaning of the verb, as well as its intentional component. To this end, we begin with Sharvit's (2003) seminal

⁵⁵ Note that I use the term 'argument' loosely here; for Elliot, all thematic participants in a given event are severed from the lexical semantics of the verb and must be introduced compositionally via external functional structure (see also Lohndal 2014).

paper on *try*, and proceed to a number of more recent accounts that follow in Sharvit's tradition.

6.3.1. Sharvit (2003)

Prior to Sharvit's influential work on the semantics of *trying*, it was largely assumed that *try* belonged to the same category of verb as canonical attitudinal predicates such as *want* and *believe* (see Chierchia and McConnell-Ginet 2000). This characterisation was supported by the apparent availability of both an existential and non-existential reading of an embedded indefinite NP. Consider, for example, the behaviour of the attitudinal predicate *want* in (407a): this construction permits an existential reading, as in (407b), as well as a non-existential reading (see (407c)).

(407) a. John wanted to find a syntax book.

b. Existential reading:

There was a syntax book *x* such that John's desires would have been satisfied if he had found *x*.

c. Non-existential reading:

John's desires would have been satisfied if there had been a syntax book *x* such that John found *x*.

(Sharvit 2003:403)

The possible continuations in (408) seem to support the availability of either reading. We see in (408a) that the pronoun *it* in the second conjunct refers back to the *syntax book* in the first, thereby supporting an existential reading. On the other hand, in (408b) we find that the existence of the *syntax book* may be explicitly denied (Sharvit 2003:404).

(408) a. John wanted to find a syntax book, but Susan hid it under the bed, so he didn't find it.

b. John wanted to find a syntax book, but there was no syntax book around.

In the environment of this same embedded predicate, *try* behaves in an identical manner. Consider the availability of both existential and non-existential readings in (409), as well as the possible continuations in (410). In isolation, these data support the view that *try* and *want* belong to the same attitudinal category.

- (409) a. John tried to find a syntax book.
 b. Existential reading:
 There was a syntax book x such that John's attempts would have been successful if he had found x .
 c. Non-existential reading:
 John's attempts would have been successful if there had been a syntax book x such that John found x .
- (410) a. John tried to find a syntax book, but Susan hid it under the bed, so he didn't find it.
 b. John tried to find a syntax book, but there was no syntax book around.
- (Sharvit 2003:404)

However, Sharvit observed that, despite the similarities between *want* and *try* in (407-410), there are many predicates which force an existential reading of an indefinite NP when embedded under *try*. In contrast, the existential reading is never enforced in comparable *want* constructions.

- (411) a. John wanted to cut a tomato, but it was too hard to cut. *existential*
 b. John wanted to cut a tomato, but there were no tomatoes to cut. *non-existential*
- (412) a. John tried to cut a tomato, but it was too hard to cut. *existential*
 b. #John tried to cut a tomato, but there were no tomatoes to cut. *non-existential*
- (413) a. Mary tried to recover from an illness, but she couldn't recover from it. *existential*
 b. #Mary tried to recover from an illness, but she wasn't sick. *non-existential*
- (414) a. Bill tried to tear up a book, but it was too hard to tear (up). *existential*
 b. #Bill tried to tear up a book, but there was no book to tear (up). *non-existential*
- (Sharvit 2003:404-405)

Sharvit asserts that this result is unexpected under a standard Hintikkan framework of propositional attitude (Hintikka 1962). Instead, Sharvit offers an analysis of *try* based on

the semantics of the progressive aspect, as proposed by Landman (1992). For Landman, a progressive utterance such as *Mary was crossing the street* specifies a relationship between an event in which Mary crosses the street and some ongoing event in the evaluation world. In order to express the nature of this relationship, Landman appeals to the notion of a *continuation branch*: given an ongoing event e in an evaluation world w , a continuation branch of e in w will provide the unique sequence of event-world pairs that show the plausible progression of e . The truth of a progressive utterance, then, may be valued based on whether or not the given continuation branch contains an event-world sequence that fits the relevant event description (e.g., if there is some event-world pair in which Mary successfully crosses the street). Sharvit modifies Landman's account slightly, such that any given event e may have any number of continuation branches which may differ in their sensitivity to what may be considered *realistic* vs. *non-realistic* progressions of events. We provide Sharvit's definition of a realistic continuation branch in (415) below (see also Grano 2011).

- (415) A *realistic continuation branch* of e relative to w is a sequence $\langle\langle e_1, w_1 \rangle, \dots, \langle e_n, w_n \rangle\rangle$ such that (a)-(d) hold:
- a. $w_1 = w$, $e_1 = e$, and for any m , e_m is an event in w_m ;
 - b. if $n > 1$, then for any m such that $n > m \geq 1$: (i) e_m is a proper stage of e_{m+1} ; and (ii) there is an event in w_m (Max- w_m) which is the maximal event in w_m of which e is a proper stage;
 - c. for any m such that $n > m \geq 1$, w_{m+1} is a reasonable option for e in w (i.e., there is a reasonable chance on the basis of what is internal to e in w that e continues in w as far as it does in w_{m+1}) and: (i) if e_m is Max- w_m , then w_{m+1} is a world maximally similar to w_m where whatever interrupts Max- w_m in w_m doesn't interrupt it in w_{m+1} , and (ii) if e_m is not Max- w_m , $w_{m+1} = w_m$, and
 - d. either there is not Max- w_n , or: (i) $e_n = \text{Max-}w_n$ and (ii) there is no closest world to w_n that has an event of which e_n is a proper stage that is a reasonable option for e in w .

(Sharvit 2003:412-413)

Further, Sharvit leverages the definition of a realistic continuation branch in order to define the semantics of the progressive. As illustrated in (416), the progressive aspect PROG of an event e and property P is licensed just in case e is an ongoing event in the world, and there is an event e' within any realistic continuation branch of e such that P holds of e' .

- (416) For any event e , property of events P , and world w , $e \in \text{PROG}(w)(P)$ iff:
- a. e is an event in w ; and
 - b. for any realistic continuation branch C for e relative to w , there is an event e' and a world w' such that $\langle e', w' \rangle$ is in C and $e' \in P(w')$.

(Sharvit 2003:414)

Sharvit's proposal for the semantics of *try* differs from the progressive aspect in (416) in two critical ways. First, the author asserts that, unlike the progressive, *try* is significantly less sensitive to the realistic likelihood of any given continuation branch. As such, while *Mary was swimming across the Atlantic Ocean* is highly infelicitous due to the very small chance that Mary actually succeeds, the utterance *Mary tried to swim across the Atlantic Ocean* is far more acceptable. Second, Sharvit argues that *try* contains an attitudinal component, such that the predicate quantifies over the subject's 'success' worlds (in the spirit of Heim 1992). With these factors in mind, consider Sharvit's definition of *try* in (417). The extensional statement in (417a) is identical to that in (416a), thus ensuring that *try* instantiates an event in the actual world. However, (417b) differs from its progressive counterpart, such that *try* does not necessitate the use of *realistic* continuation branches, but rather admits those that are potentially non-realistic. Finally, the statement in (417c) instantiates quantification over the subject's success worlds.

- (417) For any event e , property of events P , individual a , and world w , $e \in \text{TRY}(w)(P)(a)$ iff:
- a. e is an event in w ;
 - b. there is a (possibly non-realistic) continuation branch C of e relative to w (sufficiently similar to any realistic continuation branch of e relative to w) such that there is an event-world pair $\langle e^*, w^* \rangle$ in C such that $e^* \in P(w^*)$; and
 - c. for every w' compatible with what a believes in w : any world w'' maximally similar to w' such that there is a (possibly non-realistic) continuation branch C' of e relative to w'' (sufficiently similar to any realistic continuation branch of e relative to w'') and an event-world pair $\langle e^*, w^* \rangle$ in C' such that $e^* \in P(w^*)$, is more successful to a in w relative to e than any w'' maximally similar to w' where there is no such continuation branch.

(Sharvit 2003:420-421)

Armed with this semantics, Sharvit offers an explanation for the (un)availability of non-existential readings of embedded indefinites in *try* constructions (see (409-414)), based primarily on the underlying event structure of the embedded predicate. Take, for instance, the predicate *cut a tomato*; for Sharvit, this VP instantiates a transitive activity predicate which implicates *a tomato*, and ends with the tomato undergoing a particular change-of-state (in this case, being *cut*). As such, for any event *e* which is a *cutting a tomato* event, there is no proper stage which does not involve *a tomato*. Given that the definition of a *continuation branch* makes crucial use of event-stages (see (415)), the unavailability of a non-existential reading is expected in this environment. In contrast, the underlying event structure of the predicate *find a syntax book* is arguably composed of an intransitive *searching* activity, as well as an eventuality in which *a book* is found. We may therefore conceptualise a proper stage of a *find a syntax book* event which does not implicate *a book*, and as such a non-existential reading does not conflict with the definition of a *realistic continuation branch*.

6.3.2. Grano (2011) and Pearson (2012)

In response to Sharvit's (2003) semantic analysis of *try*, Grano (2011) observes a number of undesirable consequences of Sharvit's *continuation branch* approach. First, Grano challenges the notion that the likelihood of the success of the embedded property factors into the semantic definition of *try*. Consider the statement in (417b): according to Sharvit, *try* invokes a possibly non-realistic continuation branch that is 'sufficiently similar to any realistic continuation branch of *e* relative to *w*'. This notion is crucial to Sharvit's definition, as it provides an explanation as to why *Mary tried to cross the street* is judged false in any case in which Mary does not put in a sufficient amount of effort (e.g., if *Mary* is sitting at home on the sofa).⁵⁶ As such, while *try* will tolerate a higher degree of unrealistic probability, it must still be the case that the desired outcome is 'sufficiently' likely.

Grano (2011) asserts that this sensitivity to sufficient likelihood makes the wrong predictions concerning the felicity of *try* constructions in extremely unrealistic/unlikely scenarios. Consider, for example, a context in which John is involved in a car crash and becomes paralysed, unbeknownst to himself. Upon arrival, a medical examiner asks him to raise his arm. We see in this case that, while the progressive construction in (418a) is undeniably false, example (418b) involving *try* may be true, despite John's physical

⁵⁶ Sharvit notes that the point at which a possibly non-realistic continuation branch becomes 'sufficiently similar' to any related realistic continuation branches must be determined by context on a case by case basis.

inability to achieve the outcome described by the embedded infinitive. The same observations hold of the minimal pairs in (419,420); in each case, *try* is able to tolerate extremely unrealistic outcomes, while the progressive aspect is not.

- (418) a. #John was unknowingly paralysed and was raising his arm.
b. John was unknowingly paralysed and tried to raise his arm.
- (419) a. #John was cutting a tomato with his mind.
b. John tried to cut a tomato with his mind.
- (420) a. #John was making two plus two equal five.
b. John tried to make two plus two equal five.

(Grano 2011:432)

Grano's second challenge to the continuation branch analysis of Sharvit (2003) comes from variation in entailment patterns in constructions involving incremental themes. For example, consider the minimal pairs in (421) and (422). In each case, we find that the progressive aspect entails some degree of integral change in the direct object, according to some relevant scale of measurement. Conversely, this change is not entailed in the corresponding *try* constructions. On the assumption that the progressive aspect and *try* both instantiate an event *e* that holds in *w*, this result is unexpected.⁵⁷

- (421) a. John was eating an apple. \Rightarrow part of the apple was consumed.
b. John tried to eat an apple \nRightarrow part of the apple was consumed.
- (422) a. John was raising his arm. \Rightarrow John's arm moved upward.
b. John tried to raise his arm \nRightarrow John's arm moved upward.

(Grano 2011:433)

Given that both *try* and the progressive aspect contain an identical extensional component, the minimal pairs in (418-422) intuitively highlight the inadequacy of the continuation branch approach to the semantics of *try*. In order to address these issues, Grano offers an

⁵⁷ We abstract away here from the contribution of the attitudinal component of *try*; Grano's observations concern only the entailments related to the extensional component of *try*, which is by definition identical to that of the progressive aspect (see examples (416a,417a) above).

analysis of *try* which marries two distinct linguistic hypotheses: (i) the hypothesis that eventualities are decomposed into different stages (see e.g., Parsons 1990; Smith 1991; Kamp and Reyle 1993; Caudal 2005), and (ii) Condoravdi's (2009) semantic analysis of progressive aspect.

Beginning with (i), Grano assumes that any volitional eventuality may be decomposed into a number of distinct 'stages', which minimally include: (i) a *preparatory stage*, which occurs before the external onset of the event, (ii) an *inner stage*, which occurs after the external onset of the event, and (iii) an *endpoint*, which denotes event culmination.⁵⁸ For Grano, the progressive aspect entails that the event in question has progressed to its *inner stage*; the event has been externalised, in the relevant sense. On the other hand, *try* entails that the embedded event progresses *minimally* to the *preparatory stage* (though it may also describe externalised eventualities). Grano motivates this view of *try* based on a tradition in the philosophical literature, such that *try* denotes a *mental action* (cf. Hornsby 1980; Searle 1983; Pietroski 2008). This pre-theoretical conceptualisation provides some purchase on the data in (418-422). Specifically, if the progressive aspect entails that the event in question has progressed to its *inner stage*, and has thus become externalised, it follows that any incremental themes will have begun their change-of-state along the relevant scale, as in (421a, 422a). Conversely, if *try* requires only that the event be in its *preparatory stage*, then we correctly predict the lack of any change-of-state entailments in incremental theme constructions (421b, 422b).

Moving on to (ii), Grano employs a variation on Condoravdi's (2009) semantics for the progressive aspect. Condoravdi's definition of the progressive makes use of two critical concepts: (i) a degree semantics, in the spirit of Piñón (2008), and (ii) an ordering source in the sense of (Kratzer 1981). Concerning the former, Condoravdi assumes that an eventuality is realised to degree d , such that $0 \leq d \leq 1$. For the latter, we adopt Kratzer's argument that possible worlds may be ranked by an ordering source, based on the definition in (423).⁵⁹ Condoravdi's definition of the progressive follows in (424).

$$(423) \quad u \leq_{o(w)} v \iff \{p | p \in o(w) \wedge v \in p\} \subseteq \{p | p \in o(w) \wedge u \in p\}$$

(Grano 2011:436, ex. 27)

⁵⁸ Achievements, accomplishments and other change-of-state predicates will arguably include (minimally) an additional fourth stage, *result state*, which holds after the *endpoint* of the event.

⁵⁹ A possible world u is ranked higher than a possible world v relative to an ordering source o in world w iff the set of propositions in $o(w)$ that are true in v is a subset of the set of propositions in $o(w)$ that are true in u .

- (424) $\text{PROG}(e, P)$ is true in w relative to c with contextual standard d_c iff:
- a. Degree of realisation: for some d , $P(w, e, d)$ and $d \geq d_c$,
 - b. Ordering source: there are e' , d' and w' such that $e \subset_{nf} e'$, $d \leq d'$, $w' \leq_{o_i} w$,
and $P(w', e', d')$

(Condoravdi 2009:14; Grano 2011:436)

The statement in (424a) ensures that the progressive is only judged true iff event e is realised to some degree d in w such that $P(w, e, d)$, and d exceeds a contextually determined threshold d_c . In (424b) we observe Condoravdi's use for Kratzer's ordering source: the progressive is true iff there is an event-degree-world triple $\langle e', d', w' \rangle$, such that e is a non-final stage of e' , d is less than or equal to degree d' , and w' ranks higher than w according to some contextually determined ordering source o_i (Grano 2011:436-437).

We provide Grano's definition for *try* in (425) below; Grano's semantics exploit Condoravdi's analysis of the progressive with two critical alterations. First, we find that, rather than requiring a degree d to be realised to a greater degree than some contextually determined threshold d_c , Grano proposes that *try* merely requires that d be realised to some degree greater than 0 (see (425a)). Second, while the progressive utilises a contextually determined ordering source, Grano argues that the ordering source employed in the semantics of *try* is determined by the subject's intentions (as in (425b)).

- (425) $\text{TRY}(e, P, a)$ is true in w iff:
- a. Degree of realisation: for some d , $P(w, e, d)$ and $d \geq 0$,
 - b. Ordering source: there are e' , d' and w' such that $e \subset_{nf} e'$, $d \leq d'$, $w' \leq_{o_a} w$,
and $P(w', e', d')$

(where o_a is an ordering source based on a 's intentions)

(Grano 2011:437, ex. 32)

Grano's semantics in (425) succeeds in accounting for both an *action* component and an *intention* component in *try* constructions. Realisation of P to some degree d that is greater than 0 ensures some *action* (even if that *action* remains preparatory in nature). Likewise, ranking w' higher than w according to an ordering source determined by the subject's intentions provides a natural explanation for the *intentional* component of *try*.

However, unlike Sharvit's (2003) account, Grano's analysis does not predict the apparent infelicity of the non-existential readings of embedded indefinites; it is indeed possible that the preparatory/mental stage associated with a *cutting a tomato* event need

not involve an actual tomato. Grano argues that, contrary to Sharvit's observations, the apparent unavailability of non-existential readings of indefinite NPs in the complement of *try* is in fact the result of a pragmatic implicature. That is, given the sentence *John tried to cut a tomato*, and on the assumption that *John* is of sound mind, we understand that *John* is performing some action with the intention of *cutting a tomato*, and as such the existence of *a tomato* is implied. Some support for Grano's implicature-based argumentation comes from the ability to cancel said implicature, as in (426a). Compare this example with the progressive construction in (426b), in which an existential reading of the indefinite is truly entailed.

- (426) a. John tried to cut a tomato, but he was hallucinating and there was no tomato to cut.
- b. #John was cutting a tomato, but he was hallucinating and there was no tomato to cut.

(Grano 2011:439, ex. 38)

Grano's (2011) semantic analysis of *try* is adopted by Pearson (2012) to characterise a number of implicative predicates. For example, Pearson argues that *manage* may be defined using the same formula as in (425), with only minor modifications. In this case, *manage* requires that P be realised to completion (e.g., $d = 1$), and presupposes some amount of difficulty for the agent.

(427) $\text{manage}(e, P, a)$ is only defined in a context c and a world w if in w there is some effort or difficulty involved in being the agent of e for a .

$\text{manage}(e, P, a)$ is true in w iff:

- a. Degree of realisation: for some d , $P(w, e, d)$ and $d = 1$,
- b. Ordering source: there are e' , d' and w' such that $e \subset_{nf} e'$, $d \leq d'$, $w' \leq_{o_a} w$, and $P(w', e', d')$

(where o_a is an ordering source based on a 's intentions)

(Pearson 2012:407, ex. 141)

Similarly, Pearson shows that *avoid* may receive a similar treatment, such that P is realised to degree $d = 0$ and the subject of *avoid* had no intention of realising P; in this case, the ordering source based on a 's intentions ranks w higher than any world in which P is realised to a degree greater than 0.

- (428) $\text{avoid}(e, P, a)$ is true in w iff:
- a. Degree of realisation: for some d , $P(w, e, d)$ and $d = 0$,
 - b. Ordering source: there are e' , d' and w' such that $e \subset_{nf} e'$, $d \leq d'$, $w \leq_{o_a} w'$,
and $P(w', e', d')$
(where o_a is an ordering source based on a 's intentions)

(Pearson 2012:408, ex. 142)

While the semantic definitions provided for *try* in (425) as well as the implicatives in (427) and (428) adequately characterise the meaning of these various predicates in infinitival complementation environments, it must be noted that these various definitions provide no means of analysing these predicates in their DP-selecting aspects.

6.3.3. Grano (2017a)

Following Sharvit (2003) and Grano (2011), Grano (2017a) seeks to provide a cross-linguistic account of *try* by utilising the familiar *action* and *intention* components, as well as a coercive *causative* component in non-control environments. Consider Grano's semantic denotation of the sentence *John tried to open the door* in (429). Here, Grano borrows the function *INT* from Stephenson (2010), which takes an individual x and world w and returns the set of possible worlds compatible with x 's intentions in w . Furthermore, Grano assigns *try* a pseudo-aspectual component, borrowing the initial sub-event relation ($<_{init}$) defined in Piñango and Deo (2016), and employed in chapter 5 of this thesis to characterise some aspectual predicates.

$$(429) \quad \exists e [\text{Ag}(e, j) \wedge \forall w' \in \text{INT}_{j,w'}: \exists e' [e <_{init} e' \wedge \text{open}(e') \wedge \text{Ag}(e', j) \\ \wedge \text{Th}(e', d) \text{ in } w']]$$

In line with the assumptions of Grano (2011), Grano necessarily assumes here that $<_{init}$ relates an event to its initial *mental action* or *preparatory* stage; a different and distinct sub-event relation would need to be defined to characterise a predicate such as *begin*, which arguably relates an event to its initial *externalised* or *inner stage* sub-part (see section 6.3.2 for relevant discussion). The LF in (429) explicitly asserts that the agent of the embedded event is *John*, thereby yielding a control reading, and the aspectual semantics within the intentional component yields a necessarily simultaneous interpretation.

However, Grano notes that this kind of analysis of *try* does not provide any clear path to characterising non-control instantiations of *try*, which are possible in some languages. Indeed, Grano notes that for some varieties of English, the predicate *try* permits non-control complements in the form of *for-to* clauses (as in (430)). Further still, we see in (431) that while the Hebrew predicate *nisa* (*tried*) requires simultaneity in control constructions (see (431a)), non-control constructions (such as in (431b)) are possible. In these latter cases, future-orientation of the embedded clause becomes marginally acceptable.^{60,61}

(430) John tried for Bill to leave.

(431)a. Ha-yom Dani nisa [PRO liftoax et ha-delet (*maxar)].
 the-day Dani tried.3MS open.INF ACC the-door (*tomorrow)
 ‘Today, Dani tried to open the door (tomorrow).’

b. Ha- Dani nisa [she-Moshe yiftax et ha-delet (%maxar)].
 yom
 the-day Dani tried.3MS that-Moshe open.3MS.FUT ACC the-door (%tomorrow)
 ‘Today, Dani tried for Moshe to open the door (tomorrow).’

(Grano 2017a:5-6)

To start, Grano provides the semantic definition in (432) for *try*. Notice that, for Grano, *try* carries with it the presuppositional restriction that, for any embedded predicate *P*, any individual *x* that saturates *P* must be understood as the thematic agent of *P*.⁶²

⁶⁰ We utilise % to denote speaker variation, according to Grano (2017a).

⁶¹ Grano further extends this generalisation to Spanish, observing that the predicate *intendar* exhibits both control and non-control instantiations, and permits future-orientation in the latter case. However, we contend that Spanish possesses an arguably closer cousin to English *try* in the predicate *probar*, and furthermore that *intendar* is better translated as *intend*, which allows both control and non-control constructions in English. We therefore omit the Spanish data here, and submit that further investigation is required to determine the relevant (non-)control properties of *probar*.

⁶² Grano motivates this presuppositional restriction based on the infelicity of *try* constructions involving non-agentive embedded predicates, e.g., *#John tried to go through puberty*.

- (432) TRY(P)(x)(e)(w) is defined iff ...
 $\forall y \forall e' \forall w' [P(y)(e')(w') \rightarrow \text{Ag}(e', y) \text{ in } w']$
 where defined, TRY(P)(x)(e)(w) = 1 iff ...
 $\text{Ag}(e, x) \wedge \forall w' \in \text{INT}_{x,w'}: \exists e' [e <_{\text{init}} e' \wedge P(x)(e')(w')]$

This definition will trivially give us the subject-control use of *try*, as exemplified in (429) above but will fail to accommodate apparent non-control cases of *try*. That is, the English example in (430), for those speakers who accept it, appears to violate the presuppositional restriction defined in (432), since *John* is not understood as the agent of the embedded event. To account for these non-control constructions, Grano employs a coercive causative operator as defined in (433). This operator will take a relevant *for-to* clause and realise its causing event as well as the agent of that causing event.⁶³

- (433) $[[\text{Op}_c]] = \lambda P \lambda x \lambda e \lambda w \exists e' [\text{Cause}(e, e') \wedge \text{Ag}(e, x) \wedge P(x)(e')(w)]$
 (Grano 2017a:15, ex. 51)

Consider now the example in (434), which provides the logical form of the non-finite clausal complement *for Bill to leave* combined with our causative operator in (433). The resulting infinitive denotes the property of individuals who are the agent of the causing event of the *Bill-leaving* event.

- (434) $[[\text{Op}_c \text{ for Bill to leave}]] = \lambda x \lambda e \lambda w \exists e' [\text{Cause}(e, e') \wedge \text{Ag}(e, x) \wedge \text{leave}(e') \wedge \text{Ag}(e', \text{Bill})]$

When combined with the causative operator, *for-to* clauses no longer violate the presuppositional restriction defined in (432). As we see in (435), *try* selects the coerced *for-to* clause, instantiates *John* as the agent of the causing event, and establishes a sub-event relation between the event of *trying* and the causing event introduced by Op_c . Note that the relevant denotation in Grano (2017a) does not include the assertion of the matrix subject as the agent of the causing event, but the nature of Op_c as defined in (433) makes this assertion a necessity.

⁶³ Here Grano follows Pearson (2013) in assuming that all non-finite clauses are property-denoting, and as such both subject-less infinitives and non-finite *for-to* clauses will be of type $\langle e, \langle \mathcal{E}, \text{st} \rangle \rangle$ (a function from individuals to function from eventualities to propositions).

$$(435) \quad \llbracket \text{John tried Op}_c \text{ for Bill to leave} \rrbracket = \exists e[\text{Ag}(e, j) \wedge \forall w' \in \text{INT}_{j,w'}: \exists e'[e <_{\text{init}} e' \\ \wedge \text{Ag}(e', j) \wedge \exists e''[\text{Cause}(e', e'') \wedge \text{open}(e'') \wedge \text{Ag}(e'', b) \wedge \text{Th}(e'', d) \text{ in } w']]]$$

(Grano 2017a:12)

For Grano, the availability of future-orientation in non-control instantiations of *try* is expected on the causative analysis in (435), on the hypothesis that the Cause predicate establishes a relation of *indirect causation* (see e.g., Martin and Schäfer 2014). Recall from chapter 5 that, for Kratzer (2005), indirect causation is the result of a *causing event* relation, rather than a relation instantiating an *event of causing*. As such, there is no obligation that the causing event and the caused event be temporally contiguous, and as such future-orientation is available.

While Grano's (2017a) account cannot accommodate DP complements, his utilisation of a causative component in the meaning of *try* will be integral to the analysis we construct in section 6.4. However, *contra* Grano, we will argue that the causative layer of the predicate *try* is not a coerced element realised in only a subset of constructions, but rather is present in both control and apparent non-control instantiations of the verb.

6.4. A new proposal for control predicate *try*

In this section we motivate and formalise a novel account for *try* in both its infinitival- and nominal-selecting aspects. We begin in section 6.4.1 by providing a number of novel observations concerning the entailment patterns of *try* in both nominal and clausal complement environments. In 6.4.2 we briefly motivate a view of intentions such that goals/intentions are valued relative to an event, rather than to any one particular event participant. Finally, in 6.4.3 we provide an analysis of *try* such that the predicate encodes two thematic internal arguments: (i) an *actional* DP argument and (ii) an *intentional/goal-oriented* infinitival argument.

6.4.1. Some novel observations

We begin in this section by observing a number of patterns across *try* constructions that will inform our lexical semantic analysis in section 6.4.3. In particular, we will demonstrate that the *actions* and *intentions* of *try* may be conceived of as distinct arguments of the verb. Furthermore, we will show that the relationship between *try*'s extensional/actional

component and its intentional component is better captured by a relation of causation rather than aspectual parthood (as is argued in Grano 2017a). To start, consider again our observation from chapter 2 that when *try* takes an event-denoting DP complement, completion of said event is entailed, as in (436). The opposite is true of infinitival complement constructions; as we see in (437), there is no salient entailment that the event denoted by the non-finite clause is completed under *try*.

- (436) a. The government tried the abolition of workers' rights.
b. \Rightarrow The government abolished workers' rights.

- (437) a. The government tried to suppress the uprising.
b. \nRightarrow The government suppressed the uprising.

We submit the hypothesis that the DP complement in (436a) represents the *action* while the infinitival complement in (437a) encodes the relevant *intentions* or *goals* associated with the *trying* event. Furthermore, we propose that in the presence of one argument, the other is either entailed or presupposed. That is, if *try* selects an *action*-denoting DP complement, the resulting construction presupposes some relevant *intention*. Likewise, if *try* takes an *intention* in the form of a non-finite clause, the construction entails a relevant *action*.

Initial support for this hypothesis comes from the observation that the unrealised argument of *try* is always available in the form of an adjunct. Consider, for example, the DP complement construction in (438a); we find that when an *actional* DP is selected by the predicate, the relevant *intention* may be realised in a purpose clause adjunct. Similarly, in the presence of an infinitival *intention* argument, an *action* is available in the form of an instrumental *with*-PP, as in (438b).

- (438) a. The government tried the abolition of workers' rights (in order to suppress the uprising).
b. The government tried to suppress the uprising (with the abolition of workers' rights).

The fact that *try* + infinitival complement entails some action is not a new observation; it was this principle that motivated Sharvit's (2003) progressive account of *try*, as discussed

in Section 6.3.1. In order to make this entailment explicit, we may demonstrate that the entailment of some *action* in (439) disappears under question formation (as in (440)) as well as under negation (see (441)). These observations suggest that the relevant *action* is truly entailed by the predicate, rather than merely presupposed.

- (439) a. The government tried to suppress the uprising.
b. \Rightarrow The government performed some action x with the intention of suppressing the uprising.

- (440) a. Did the government try to suppress the uprising?
b. \nRightarrow The government performed some action x with the intention of suppressing the uprising.

- (441) a. The government did not try to suppress the uprising.
b. \nRightarrow The government performed some action x with the intention of suppressing the uprising.

Critically, previous work on *try* has failed to observe the related presuppositional pattern found in non-clausal complement environments. Specifically, when *try* selects a DP complement which denotes its *action*, it presupposes a relevant intention to bring about some property P . Consider, for example, the utterance in (442a). The use of *try* in this environment intuitively implies that *the government* has some motivation for performing the described action, otherwise a predicate such as *carry out* or *perform* would be deemed more appropriate. We note in (442b,c) that this utterance is compatible with both a reading in which the actions of the government are understood in conjunction with a property P that the government intends to manifest, as well as a reading in which the government performs its actions *just for fun*.

- (442) a. The government tried the abolition of workers' rights.
b. \Rightarrow The government performed an action involving the abolition of workers' rights with the intention of bringing about some P .
c. \Rightarrow The government performed an action involving the abolition of workers' rights (just for fun).

Furthermore, we may demonstrate that the intention to bring about some property P is

indeed a presupposition rather than an entailment. We see in (443) and (444) that under question formation and negation, it is still implied that the government possesses some relevant intention to manifest some property *P* in accordance with its actions.

- (443) a. Did the government try the abolition of workers' rights?
b. ⇒ The government has the intention of bringing about some *P* (and the abolition of workers' rights may be implicated in bringing about *P*).

- (444) a. The government did not try the abolition of workers' rights.
b. ⇒ The government has the intention of bringing about some *P* (though the abolition of workers' rights is not implicated in bringing about *P*).

It is furthermore useful to note that the observations in (442)-(444) readily extend to environments involving non-eventive DP complements. Consider the example in (445a); we again find in (445b,c) that this utterance is compatible with both a reading in which the mechanic is understood as having some intentions behind his actions (presumably to repair the car), as well as a *just for fun* reading.

- (445) a. The mechanic tried a new carburettor.
b. ⇒ The mechanic performed an action involving a new carburettor with the intention of bringing about some *P*.
c. ⇒ The mechanic performed an action involving a new carburettor (just for fun).

As expected, the presupposition of some intention to bring about some *P* persists under question formation (446) and negation (447).

- (446) a. Did the mechanic try a new carburettor?
b. ⇒ The mechanic has the intention of bringing about some *P* (and a new carburettor may be implicated in bringing about *P*).

- (447) a. The mechanic did not try a new carburettor.
b. ⇒ The mechanic has the intention of bringing about some *P* (though a new carburettor is not implicated in bringing about *P*).

Having established both the entailment of an *action* in the presence of an *intention*, as well

as the presupposition of an *intention* in the presence of an *action*, we will move on to consider the relation between these two thematic arguments. Specifically, we will demonstrate that Grano's (2011, 2017a) aspectual approach to the relation between *action* and *intention* does not sufficiently capture the meaning of *try*.

First, we may observe that the relation between the *action* event and the *intention* event need not be one of structural parthood. Consider, for example, a scenario in which Mary suffers from agoraphobia. This morning she woke up with the intention of leaving her house and crossing the street. For hours she paced the floor in her foyer, psyching herself up for the task at hand. However, in the end, Mary was too frightened and never left her house. In this context, the *try* construction in (448) is perfectly acceptable.

(448) Mary tried to cross the street today.

The grammaticality of (448) is unexpected on Grano's (2017a) definition of *try*, in which *try* instantiates an initial sub-event relation in all suitable *INT* worlds (see (432) above). For this to be true, it is necessary to make the undesirable assumption that what Mary did in the evaluation world (pace back and forth in the foyer) constitutes the initial sub-event of a *Mary crossing the street* event in all worlds compatible with her intentions, despite the spatial dislocation of the two events. This issue is related to Grano's (2011) observation that the *trying* event need not be physically externalised; recall that, in a scenario in which John has been paralysed from the neck down, the *try* construction in (449a) is acceptable while the *begin* construction in (449b) is infelicitous.

(449) a. John tried to raise his arm.

b. #John began to raise his arm.

Grano accounts for this variability by appealing to the notion of *mental action stages* of events, which need only exist internally to the subject (see Kamp & Reyle 1993; Caudal 2005). On this account, the initial sub-event relation $<_{init}$ would necessarily be read as relating an event to its initial *mental action* event. While this strategy provides a nice explanation for the minimal pair in (449) (on the assumption that the relevant sub-event instantiated by *begin* must be externalised), its relevance to (448) remains unclear. That is, unlike our paraplegic in (449), Mary's actions regarding her intentions in (448) are very much externalised.

Further still, Grano's appeal to *mental action* stages of events raises a non-trivial problem regarding the animacy requirements of those predicates which may be embedded under *try*. To illustrate, consider again the minimal pair in (449); according to Grano, *try* requires only that the embedded event *raise* is realised to its *mental action* stage. However, the nature of *mental action* becomes unclear given the observation in (450) that *raise* can otherwise appear with inanimate subjects. Indeed, many predicate-types which appear in the embedded position of *try* constructions – such as causative predicates (451) and activity verbs (452) – can trivially realise inanimate subjects in alternative environments.

- (450) a. The torrential rain raised the water level in the canal.
b. Archimedes' new pulley system was able to raise heavy objects with ease.

- (451) a. John tried to melt the snow.
b. The sun melted the snow.

- (452) a. John tried to roll the ball down the street.
b. The ball rolled down the street.

These observations are incomprehensible on any account in which predicates such as *raise*, *melt* and *roll* encode *mental action* in all instantiations. It follows that Grano's appeal to event stages would require a further stipulation such that the eventualities denoted by verbs contain *mental action* stages iff a given verb's subject satisfies a [+animate] selectional restriction. Given the added complexity such an ambiguity introduces, we argue that an alternative characterisation of the relation between *try* and its embedded verb is necessary.

Finally, we may demonstrate that the aspectual/temporal relation between *try* and the eventuality denoted by the embedded verb is not accurately characterised by the \langle_{init} relation. For instance, consider the examples in (453) involving the predicate *begin*. In (453a), we see that the habitual temporal modifier *on Sundays* may specifically target the eventuality denoted by the embedded VP *go to church*, thereby resulting in a *going to church on Sundays* event. Furthermore, we see in example (453b) that this kind of event modification may obviate the typical *tense mismatch* constraint associated with predicates of exhaustive control (see Landau 2000). We provide an appropriate paraphrase of (453b) in (453c) below.

- (453) a. John began to go to church on Sundays.
 b. This week, John began to go to church on Sundays.
 c. → John is the agent of a *begin* event which occurred this week, and is the initial sub-event of an ongoing *going to church* event which occurs regularly on Sundays.

It is useful to note that the eventuality denoted by *go to church* in (453b) above is unbounded with regard to the temporal modifier *this week*. That is, we interpret the embedded event as regularly occurring beyond the scope of this particular seven-day interval.

Turning now to *try* constructions, we find in (454a) that – like *begin* – the predicate embedded beneath *try* may be modified by a habitual temporal modifier. However, we see in (454b) that modification of the matrix clause by *this week* results in ungrammaticality. Crucially, the example becomes grammatical again in (454c) when we replace *this week* with *this year*, thereby suggesting that the root of ungrammaticality in (454b) is that particular modifier rather than general temporal modification of the matrix clause.

- (454) a. John tried to go to church on Sundays.
 b. *This week, John tried to go to church on Sundays.
 c. This year, John tried to go to church on Sundays.

The examples in (454b) and (454c) provide a useful minimal pair regarding the aspectual properties of *try* constructions. On the assumption that *begin* instantiates a *bona fide* initial sub-event relation with its complement, the unavailability of the *try* construction in (454b) suggests that *try* does not manifest a similar relation; *try* is incompatible with an embedded event which extends beyond its temporal bounds. Rather, we see in (454c) that *try* is only compatible with temporal modification of this sort if the habitual time of the embedded event is wholly contained within the scope of the matrix temporal modifier. That is, the example in (454c) is only compatible with a reading such that the Sundays on which John tries to go to church are contained within *this year*.

Thus, we propose that the relation between the actional component of *try* and its intended outcome is one of direct causation, rather than one of aspectual part-whole structure. This notion will be fleshed out in section 6.4.3, where we will once again make use of Kratzer's (2005) distinction between *events of causing* and *events that cause*. Pre-theoretically, we will argue that the actional *trying* event constitutes an *event of causing* the

property denoted in the complement infinitival clause, specifically in the set of possible worlds compatible with the goals associated with the subject's actions.

6.4.2. The event-relativity of intentions

Before we formalise our analysis of *try* in English clausal and nominal complement environments, we must first address the notion of *intention worlds*. Recall our assumption that the external argument is absent in the lexical semantics of a verb, following Kratzer's (1996) Voice hypothesis. This assumption is *prima facie* incompatible with the encoding of Stephenson's (2010) *INT* function in the definition of a predicate such as *try* (see example (432) above); *INT* returns the set of possible worlds consistent with a subject's intentions, yet lexical verbs do not, by hypothesis, encode a subject. In this section we will pursue the notion that (some) intentions may be expressed relative to events, rather than to individuals.⁶⁴

To begin, we note the observation from Farkas (1988) that some infinitival purpose clauses may be adjoined to VPs with inanimate subjects (see also Grano 2017b). For example, consider the data in (455) below; in either case, the purpose clause adjunct expresses an intention that cannot be construed as relative to the matrix subject's attitude (given that in each utterance, the matrix subject is inanimate).

(455) a. The shopwindow has a big sale sign in it in order to attract customers.

(Farkas 1988:36)

b. The new Fender Stratocaster comes standard with high gain humbuckers in order to appeal to a more contemporary demographic.

For Farkas, examples such as those in (455) are indicative of the existence of an underlying two-place thematic responsibility relation, labelled RESP, which takes an individual *i* and a situation *s* and asserts that *i* acts with the intention of bringing about result *s*. Crucially, the individual in question need not be present in the syntax, thereby explaining the grammaticality of the inanimate subjects in (455). A full investigation of the RESP predicate and its implications would take us too far afield, but cf. Grano (2017b) for useful discussion of RESP in relation to the predicate *intend*.

⁶⁴ It may be more conceptually harmonious to consider 'intentions relative to events' as an alternative term for 'event goals.' For the sake of consistency, we will retain the term 'intentions' and the functional label *INT* throughout.

Outside the scope of Farkas' responsibility relation, we note that the data in (455) is largely consistent with an assumption made by Nissenbaum (2005) such that rationale clauses may express the goals of a volitional event, rather than the intentions of any one event participant.⁶⁵ By way of illustration, consider Nissenbaum's denotation of the sentence *Varitek took the A train in order to go to Harlem*. We find that both the VP in (456a) and the infinitive in (456b) denote predicates of events, and thus may combine via predicate modification, as in (456c). Note, here and below we adopt an extensional view of intentional semantics; this is merely a notational decision, and nothing hereafter hinges on this choice.

- (456) a. $\llbracket \text{Varitek take the A train} \rrbracket = \lambda w. \lambda e. \text{take}(e)(w) \wedge \text{Theme}(e, \text{the-A-train})$
 $\wedge \text{Agent}(e, \text{Varitek})$
- b. $\llbracket (\text{in order}) \text{ to go to Harlem} \rrbracket = \lambda w. \lambda e. \forall w' [\text{w}' \text{ is compatible with the goals}$
 $\text{relevant to } e \text{ in } w: \text{PRO goes to Harlem in } w']$
- c. $\llbracket \text{Varitek take the A train in order to go to Harlem} \rrbracket = \lambda w. \lambda e. \text{take}(e)(w)$
 $\wedge \text{Theme}(e, \text{the-A-train}) \wedge \text{Agent}(e, \text{Varitek}) \wedge \forall w' [\text{w}' \text{ is compatible with the}$
 $\text{goals relevant to } e \text{ in } w: \text{PRO goes to Harlem in } w']$

Nissenbaum's relativity of intentions to event goals provides a natural explanation to the examples in (455). In the case of (455a), the intention of attracting customers may be stated relative to the goals of the stative eventuality described by the matrix clause, in which a sign hangs in the window. Likewise, in (455b) the outcome of the guitar being more appealing to a certain demographic may be expressed as goal of the matrix event, rather than as an intention of some unrealised, implicit participant.

We submit that the kinds of intentions described by the predicate *try* in its various instantiations are best expressed as event goals, rather than individual intentions. Consider, for example, the utterance in (457) involving a volitional event with an arguably inanimate subject.

- (457) Stomach acids break down complex sugars in order for the body to more easily process the nutrients.

⁶⁵ By 'volitional event', we mean any event that is not understood to be involuntary. On this definition, VPs such as *go through puberty* will describe non-volitional events and are thus predictably incompatible with goals/intentions. This notion is likewise consistent with Farkas (1988).

It would be disingenuous to suggest that the noun phrase *stomach acids* denotes a volitional agent with the capacity for intentions. Likewise, it is extremely odd to say that the infinitive in (457) expresses the set of worlds compatible with the intentions of *stomach acids*. Rather, it is far more intuitive to assert that biological processes can be goal-oriented. As such, we might suggest that the purpose clause in (457) denotes the set of worlds compatible with the goals of *breaking down complex sugars*. This hypothesis is consistent with the unacceptability of (458); on the assumption that the predicate *intend* does, in fact, express the intentions of its subject, *stomach acids* does not constitute a licit intention-holder.

(458) #The stomach acids intended to break down the chewing gum.

Crucially for our purposes, the infelicity of (458) disappears when we replace *intend* with the predicate *try* in (459). This useful minimal pair suggests that, while the intentions encoded by the predicate *intend* are expressed relative to an individual *intender*, the intentions described by *try* are expressed relative to the goals of the *trying* event itself.

(459) The stomach acids tried to break down the chewing gum.

The variation between (458) and (459) is not an isolated case; consider the minimal pairs in (460-463) below. In each case, an inanimate subject is incompatible with *intend* but readily acceptable as the external argument to *try*.

(460) a. #The iPhone X intended to appeal to a new market.

b. The iPhone X tried to appeal to a new market.

(461) a. #Ale intended to supplant lager as the American drink of choice.

b. Ale tried to supplant lager as the American drink of choice.

(462) a. #The gas guzzlers of the 1970's intended to find a niche in an increasingly green 21st Century.

b. The gas guzzlers of the 1970's tried to find a niche in an increasingly green 21st Century.

- (463) a. #Growing housing prices intended to push out the lower classes from south
Brooklyn.
- b. Growing housing prices tried to push out the lower classes from south
Brooklyn.

These observations are unexpected on any account which holds that *try* encodes intention to the same extent that *intend* does.

Given these data, we will redefine the function *INT* as employed in Grano (2017a) to be a function that takes an event *e* and world *w* and returns the set of worlds compatible with the goals of *e* in *w*, as defined below.

- (464) *INT* relative to events
 $INT_{w,e}: \{w': w' \text{ is compatible with the goals of } e \text{ in } w\}$

We will exploit this revised definition of *INT* in section 6.4.3 as we formalise our lexical semantics for the predicate *try*.

6.4.3. *Actions and intentions in the semantics of try*

In characterising the semantic definition of *try*, we take as our starting point the observations from examples (445)-(447) that the DP complement of *try* may be non-eventive. That is, in *the mechanic tried a new carburettor*, the DP object *a new carburettor* does not denote an event but rather an individual. As such, we propose first that DP complements of *try* merge as thematic Themes of the predicate. We provide an initial Neo-Davidsonian semantic representation in (465). Note that we abstract away from world variables for now.

- (465) *try* (version 1)
 $\llbracket \text{try} \rrbracket = \lambda y. \lambda e. \text{try}(e) \wedge \text{Theme}(e, y)$

While simplistic, the definition in (465) provides us with a method to compose *try* with both individual- and event-denoting nominals. That is, it must be assumed independently of our discussion here that the two-place Theme predicate may act on either an individual of type $\langle e \rangle$ or an event *per se* of type $\langle v \rangle$. This assumption is supported by the fact that (generally) all transitive verbs may alternate between individual- and event-denoting DP

objects.⁶⁶

(466) a. John watched the TV.

b. John watched the inspection of the factory.

(467) a. Mary likes to talk about flowers.

b. Mary likes to talk about the criminal investigation of her sister.

(468) a. Bill heard about the letter.

b. Bill heard about Teresa's expression of her darkest secrets.

As such, we may compose both individual-denoting DPs, such as *the new carburettor*, along with event-denoting DPs, such as *the installation of a new carburettor* by means of the same thematic function. These two possibilities are spelled out in (469a) and (469b), respectively.

(469) a. $\llbracket \text{try the new carburettor} \rrbracket = \lambda e. \text{try}(e) \wedge \text{Theme}(e, \iota y[\text{new-carburettor}(y)])$

b. $\llbracket \text{try the installation of a new carburettor} \rrbracket = \lambda e. \text{try}(e)$
 $\wedge \text{Theme}(e, \iota e'[\text{install-new-carburettor}(e')])$

However, the examples in (469) raise two problematic questions for our burgeoning analysis of *try*. First, why does the individual-denoting DP in (469a) appear to require some amount of event coercion in order to be interpretable? Second, how do we account for the apparent exhaustive control into event-denoting nominals, such as in (469b)?

We submit that both of these questions may be adequately answered by understanding what it means for *e* to be an event of *trying*. From Sharvit (2003) we know that *try* instantiates some action on the part of the subject in the real world. That is, disregarding any intentional component in the denotation of *try*, the subject of a trying event *does something*. One rather heavy-handed way to incorporate this into the denotation of *try* is to invoke a semantic primitive along the lines of a DO predicate (in the spirit of Dowty 1979). In this way, we ensure that any agent of *e* is interpreted as the *doer* of any theme of *e*, thereby yielding the desired exhaustive control relation. Furthermore, this

⁶⁶ Indeed, this is in line with work by Lasnik (1995), who does away with the type distinction between events and individuals. For our purposes, we will retain this distinction, but note that our conclusions are compatible with either perspective.

definition necessitates the coercion of any non-event-denoting DPs that merge as the complement to *try*; individuals cannot, by hypothesis, undergo a DO event in the relevant sense. An alternative method, and the one we will pursue here, will be to assign to the definition of *try* a selectional restriction (following Grano 2017a) incorporating a requisite sense that *e* is an event of *performing*, as outlined in the following statement in (470) below.

(470) *try* (version 2)

$\llbracket \text{try} \rrbracket (y)(e)$ is defined iff *e* is a volitional event of *performing* *y*. Where defined...

$\llbracket \text{try} \rrbracket = \lambda y. \lambda e. \text{try}(e) \wedge \text{Theme}(e, y)$

Motivation for incorporating an underlying *perform* in the definition for *try* comes from the fact that both *try* and *perform* enforce obligatory control into their event-denoting DP complements, as observed in (471). With this restriction in place, we have a natural explanation for both the apparent effects of control into eventive DPs as well as the coerced nature of non-eventive DP complements.

(471) a. The mechanic_i tried [_{DP} PRO_{i/*j} the installation of a new carburettor].

b. The mechanic_i performed [_{DP} PRO_{i/*j} the installation of a new carburettor].

Before moving on to the more intentional components of *try*, it is worth noting that this analysis of *try* in its DP-selecting aspect trivially predicts the entailment of any events within the denotation of a complement DP. That is, any event nominalisation merging as the theme of *try* will be contained within the scope of matrix Aspect, and therefore subject to its restrictions. By way of illustration, consider an example in which the VP *the government try the abolition of workers' rights* merges with perfective aspect, as in (473) (we assume the denotation for perfective aspect as introduced in chapter 5, defined in (380)).

(472) $\llbracket \text{PERFECTIVE} \rrbracket = \lambda P_{\langle v, t \rangle}. \lambda t_i. \exists e [P(e) \wedge \tau(e) \subset t]$

(473) $\lambda t. \exists e [\text{try}(e) \wedge \text{Theme}(e, \iota e' [\text{abolition}(e')])$
 $\wedge \text{Agent}(e, \iota x [\text{government}(x)]) \wedge \tau(e) \subset t]$

Given that the *abolition* event is the thematic object of event *e*, and assuming some set of

relevant mapping parameters between events and objects (such as those discussed in Krifka 1992), it follows that in any world in which e culminates, the direct object e' will be entailed to completion.⁶⁷

Moving on, while our semantic definition in (465) provides an arguably adequate description for the extensional component of the predicate *try*, it is currently woefully inadequate as a full definition. Specifically, it lacks any of the intentional aspects that characterise the attitudinal nature of *try* and provides no means of composing the predicate with infinitival complements. In order to rectify these shortcomings, we will first supply the predicate with an argument P of type $\langle v,t \rangle$. Asserting the non-finite complement of *try* to be a predicate of events echoes our argumentation from chapter 5, and is in line with the VP/VoiceP analysis of simultaneous infinitives (see Wurmbrand 1998, 2001, 2002, *et seq.*). Next, we will employ the *INT* function as redefined in section 6.4.2, example (464); we allow *INT* to range over the set of possible worlds compatible with the goals of the *try* event e in w . Furthermore, we introduce an existentially quantified event e' in w' such that our predicate of events P holds of e' in w' . We provide a revised lexical entry for *try* in (474) below, introducing world variables in the spirit of von Stechow and Heim (2011), such that all predicates take a world argument which is later closed off by a pronominal world element.

(474) *try* (version 3)

$\llbracket \text{try} \rrbracket (P)(y)(e)(w)$ is defined iff e is a volitional event of *performing* y in w .

Where defined...

$\llbracket \text{try} \rrbracket = \lambda P_{\langle v,t \rangle} . \lambda y . \lambda e . \lambda w . \text{try}(e)(w) \wedge \text{Theme}(e, y) \text{ in } w \wedge \forall w' \in \text{INT}_{w,e} :$

$\exists e' [P(e') \text{ in } w']$

The use of *INT* in (474) gives us essentially the meaning that Nissenbaum (2005) associates with rationale clauses; for all worlds w' that are compatible with the goals of e in w , there is some event e' of which P holds. However, while this denotation may be adequate in describing typical rationale clauses (which arguably require only that the event they describe hold in all relevant possible worlds), it does not accurately depict the relation between the trying event e and the desired outcome $P(e')$.

We saw in section 6.3.3 that Grano attempts to solve this issue by positing an

⁶⁷ See in particular the principles of *uniqueness of objects, mapping to objects* and *mapping to events*, as discussed in Krifka (1992).

aspectual parthood relation between e and e' , such that e is the initial sub-event of e' . However, we observed a number of non-trivial problems with this view in section 6.4.1. Instead, we will leverage the apparent causative nature of *try* as discussed in section 6.4.1 in order to link the extensional event e with the intentional event e' . Specifically, we will assume following our discussion in chapter 5 the existence of a two-place semantic predicate *Cause* that relates two event variables and encodes an *event of causing*, as defined by Kratzer (2005) as in (365) below. We furthermore submit our fourth revision of the lexical entry for *try* in (476).

(475) *Events of causing other events*

An event e is an event of causing an event e' iff e is the sum of all the members of some causal chain C with maximal element e' .

(476) *try* (version 4)

$\llbracket \text{try} \rrbracket (P)(y)(e)(w)$ is defined iff e is a volitional event of *performing* y in w .

Where defined...

$\llbracket \text{try} \rrbracket = \lambda P_{\langle v,t \rangle} . \lambda y . \lambda e . \lambda w . \text{try}(e)(w) \wedge \text{Theme}(e, y) \text{ in } w \wedge \forall w' \in \text{INT}_{w,e} :$

$\exists e' [P(e') \text{ in } w' \wedge \text{Cause}(e, e')]$

According to (476), $\text{try}(P)(y)(e)$ is true in w iff e is an event of trying some theme y in w , and in all worlds w' compatible with the goals of the trying event e , there is an event e' such that some predicate of events P holds of e' in w' and e is an event of causing e' . This definition seems to intuitively capture the meaning of *try*, such that one performs some action with the intention of bringing about (viz. *causing*) some property to hold whenever that action is ‘successful’ in the relevant sense.

Crucially in (476) we arrive at the correct entailment pattern, such that event-denoting DP complements are entailed while non-finite complements are not (see especially examples (436) and (437) above). As discussed earlier in this section, DP complements are entailed by virtue of combining as a thematic Theme argument of the predicate in the evaluation world w . On the other hand, the predicate of events denoted by non-finite VP/VoiceP complements to *try* exists only within the scope of the intentional function *INT*. That is, the predicate P only holds in the set of possible worlds w' in which the goals of e in w come to fruition; it does not hold in the evaluation world w .

To illustrate the semantic content of *try* in relation to an infinitival complement, consider the logical form in (477). Assuming the existential closure of the event variable e

as well as the theme argument y , the utterance comes to denote the set of worlds in which there is a trying event e in world w with some theme y in w and whose agent is the unique individual *the government*, and in all worlds w' compatible with the goals of e in w there is some event e' in w' such that e' is a suppressing event in w' and whose theme is the unique individual *the uprising*, and e is an event of causing e' in w' . Note that, for the sake of simplicity, we assume that the non-finite clause merges as a subject-less VP, and abstract away from the semantic contribution of Aspect and Tense.

$$(477) \quad \llbracket \text{The government tried to suppress the uprising} \rrbracket = \lambda w. \exists e \exists y [\text{try}(e)(w) \\ \wedge \text{Theme}(e, y) \text{ in } w \wedge \text{Agent}(e, \iota x [\text{government}(x)]) \wedge \forall w' \in \text{INT}_{w,e}: \exists e' \\ [\text{suppress}(e')(w') \wedge \text{Theme}(e', \iota z [\text{uprising}(z)]) \wedge \text{Cause}(e, e')]]]$$

Next, consider the semantic content of *try* in relation to an event-denoting DP complement, as in example (478). Here we again assume the existential closure of the event variable e , along with existential closure of our predicate of events P . As such, the resulting logical form denotes the set of worlds in which there is an event e of trying the unique event *the abolition of workers' rights* in w and whose agent is the unique individual *the government*, and in all worlds w' compatible with the goals of e in w there is an event e' in w' such that some P holds of e' and e is an event of causing e' in w' .

$$(478) \quad \llbracket \text{The government tried the abolition of workers' rights} \rrbracket \\ = \lambda w. \exists e \exists P_{\langle v,t \rangle} [\text{try}(e)(w) \wedge \text{Theme}(e, \iota e'' [\text{abolish-workers'-rights}(e'')]) \text{ in } w \\ \wedge \text{Agent}(e, \iota x [\text{government}(x)]) \wedge \forall w' \in \text{INT}_{w,e}: \exists e' [P(e')(w') \wedge \text{Cause}(e, e')]]]$$

We note that the logical form in (477) correctly predicts the entailment of a relevant *action* in accordance with the goals of the *try* event, as per section 6.4.1. The realisation of a non-finite VP/VoicP names an *intention*; in actuality it describes the property that the goals of the trying event seek to manifest. In order to form a complete expression, the unsaturated internal theme argument must be existentially closed. Given that the theme in *try* constructions denotes the *action* that is to be performed by the *trier*, the relevant entailment is predicted. However, the logical form in (478) does not reflect the presuppositional nature of *intentions* in *try* constructions involving an *action*-denoting DP complement. Recall from section 6.4.1 that *try* constructions retain a sense of underlying intention/motivation even under question formation and negation, thereby suggesting that *intentions* are presupposed in these cases rather than entailed. In (478), on the other hand, the relevant

intention supplied by some predicate of events P is existentially closed, thereby implicating an entailment relation similar to the one observed in example (477).

In order to properly build in the *intention* of trying as a presupposition rather than an entailment, we will first remove the predicate of events argument $P_{\langle v,t \rangle}$ from the lexical semantics of *try*. This will yield a very simple lexical entry for *try*, similar to that depicted in (470) above. To this definition we supply the presupposition that there is some intention to bring about some property P in accordance with the goals of the trying event.

(479) *try* (final version)

$\llbracket \text{try} \rrbracket(y)(e)(w)$ is defined iff e is a volitional event of *performing* y in w . Where defined...

$\llbracket \text{try} \rrbracket = \lambda y.\lambda e.\lambda w. \text{try}(e)(w) \wedge \text{Theme}(e, y)$ in w

presupposes the intention to bring about some property P relevant to the goals of e in w

The definition in (479) provides us with almost everything we need to properly characterise *try*: (i) it provides a manner of composition for both eventive and non-eventive DPs, (ii) it ensures that any licit use of *try* will invoke a sense of performing y , thereby resulting in the necessary control and coercive properties observed into DP complements, and (iii) it yields the appropriate entailments/presuppositions, as outlined in section 6.4.1. Armed with this semantics, the next section will readdress the causative component of *try* and matters of the missing intentional argument.

6.4.4. Composing *try* with its infinitive

The prevailing question, then, is how do we compose non-finite clausal complements with *try* if it is not an argument of the verb itself? For inspiration, we turn to the decompositional approach to attitudinal predicates (see e.g. Kratzer 2006; Moulton 2009; Elliott 2016, a.o.). These authors critically reject the Hintikka-style intentional semantics (cf. Hintikka 1962) which holds that attitudinal predicates are quantifiers over a set of doxastic alternatives.⁶⁸ Instead, they attempt to build quantification over possible worlds into the semantics of the CP complements to attitudinal predicates. Consider the differences between the lexical

⁶⁸ We may define the set of doxastic alternatives for x as the set of possible worlds w' such that it is compatible with what x believes in w for w' to be the world that x inhabits (cf. Hintikka 1962, 1969; Lewis 1979; Chierchia 1989, a.o.).

entry for *believe* in (480) and the lexical entry in (481). The former takes as its arguments a proposition p and an individual attitude holder x and asserts that p holds in all worlds in the set of x 's doxastic alternatives. The latter holds that *believe* denotes a relation between an eventuality e and individual x , such that e is an event of *believing* and x is the *content* of what is believed (we follow the notational style in Moulton (2014) in allowing x_c to stand for individuals that have content).

$$(480) \quad \textit{believe} \text{ (Hintikkan-style)} \\ \llbracket \textit{believe} \rrbracket = \lambda p. \lambda x. \lambda w. \forall w' [w' \in \text{Dox}(x)(w) \rightarrow p(w')]$$

$$(481) \quad \textit{believe} \text{ (decompositional)} \\ \llbracket \textit{believe} \rrbracket = \lambda x_c. \lambda e. \lambda w. \textit{believe}(x_c)(e)(w)$$

As mentioned above, the decompositional approach in (481) holds that the quantification over possible worlds is a component of the complement CP, rather than of the predicate itself. For instance, Kratzer (2006) posits a logophoric complementiser *that_L* which takes a proposition and returns a predicate of contents.

$$(482) \quad \llbracket \textit{that}_L \rrbracket = \lambda p. \lambda x_c. \forall w' [\textit{compatible}(x_c)(w') \rightarrow p(w')]$$

Any resulting CP built from *that_L* will be a predicate of individuals with content (of type $\langle e, t \rangle$), and as such may combine with the decompositional denotation of *believe* in (481) via the method *Restrict* (Chung and Ladusaw 2004), thereby restricting the open content argument x_c and subsequently closing it with existential closure. For example, consider the logical form of the CP *that there are ghosts* in (483), and the composition of this CP with the predicate *believe* in example (484).

$$(483) \quad \llbracket \textit{that there are ghosts} \rrbracket = \lambda x_c. \forall w' [\textit{compatible}(x_c)(w') \rightarrow \exists y [\textit{ghosts}(y)(w')]]$$

$$(484) \quad \llbracket \textit{believe that there are ghosts} \rrbracket = \lambda e. \lambda w. \exists x_c [\textit{believe}(x_c)(e)(w) \\ \wedge \forall w' [\textit{compatible}(x_c)(w') \rightarrow \exists y [\textit{ghosts}(y)(w')]]] \\ \text{(Kratzer 2006:3)}$$

The resulting logical form denotes the set of believing events such that there is some x that is believed, and the content of x in all compatible worlds is the proposition *there are ghosts*.

With the introduction of an external possessor argument (presumably made available by a non-eventive possessive Voice head) and with the existential closure of the eventuality argument, we arrive at the logical form in (485). Put plainly, this LF denotes the set of worlds in which there is an eventuality of Lucy believing some x , and the content of x is the proposition *there are ghosts*.

$$(485) \quad \llbracket \text{Lucy believes that there are ghosts} \rrbracket = \lambda w. \exists e \exists x_c [\text{believe}(x_c)(e)(w) \\ \wedge \text{Poss}(e, \text{Lucy}) \text{ in } w \wedge \forall w' [\text{compatible}(x_c)(w') \rightarrow \exists y [\text{ghosts}(y)(w')]]] \\ \text{(Kratzer 2006:3)}$$

We would like to suggest that the intentional complement to *try* may be handled in a manner similar to that found in the decompositional approach to attitudinal predicates.⁶⁹ Specifically, we will construct a modal operator Op_{INT} (following Grano's (2017a) causative operator) which will take a non-finite predicate of events P and return the set of events e such that, in all worlds compatible with the goals of e (viz. all worlds w' that are members of $\text{INT}_{w,e}$), e is an event of causing some event e' and $P(e')$. To this end, we will invoke the same causative verbal structure implicated in aspectual constructions in chapter 5, incorporating Pyllkkänen's (2008) verbal CAUSE head, as defined in (348).

$$(486) \quad \llbracket \text{CAUSE} \rrbracket = \lambda P_{\langle v,t \rangle}. \lambda e. \lambda w. \exists e' [P(e') \wedge \text{Cause}(e, e') \text{ in } w]$$

We furthermore define Op_{INT} as a function from predicates of causing events to the set of event-world pairs compatible with the goals of e in w . As illustrated in (487), we allow the selectional restrictions imposed by Op_{INT} to ensure P is causative in nature.

$$(487) \quad Op_{\text{INT}}(P)(e)(w) \text{ is defined iff } P \text{ is } [+CAUSE] \\ \llbracket Op_{\text{INT}} \rrbracket = \lambda P_{\langle v,t \rangle}. \lambda e. \lambda w. \forall w' \in \text{INT}_{w,e} [P(e)(w')]$$

By way of illustration, consider the logical form in (488a), which constitutes the composition of the non-finite VP *to suppress the uprising* with the verbal CAUSE head. The resulting expression denotes the set of events e in w which stand in an *event of causing* relation with some e' , and e' is an event of suppressing the uprising. Subsequently,

⁶⁹ That at least some infinitives denote modal expressions is in line with Moulton's (2009) analysis of *for-to* clause complements to perception predicates; see also Grano (2016) for related discussion.

composition of this CAUSE-P with our intentional operator Op_{INT} gives us the logical form in (488b). Here we see that Op_{INT} ensures that the predicate of events denoted by our CAUSE-P occurs strictly within the scope of $INT_{w,e}$. That is, Op_{INT} takes a predicate of causing events and returns a set of events e in w such that, in all worlds w' compatible with the goals of e , e is an *event of causing* some e' in w' .

- (488) a. $\llbracket \text{CAUSE to suppress the uprising} \rrbracket = \lambda e.\lambda w.\exists e'[\text{suppress}(e')(w') \wedge \text{Theme}(e', \iota z[\text{uprising}(z)]) \wedge \text{Cause}(e, e') \text{ in } w]$
- b. $\llbracket Op_c \text{ CAUSE to suppress the uprising} \rrbracket = \lambda e.\lambda w.\forall w' \in INT_{w,e} [\exists e' [\text{suppress}(e')(w') \wedge \text{Theme}(e', \iota z[\text{uprising}(z)]) \wedge \text{Cause}(e, e') \text{ in } w']]$

As a predicate of events, we may thus combine the infinitive in (488b) with the verb *try* by means of *predicate modification* (Heim and Kratzer 1998), as in (489a). The resulting construction denotes the set of *trying* events e with some theme y in w such that, in all world w' compatible with the goals of e in w , there is some event e' such that e' is a *suppressing the uprising* event in w' and e is an event of causing e' in w' . The introduction of an agentive Voice head plus the existential closure of the event variable e gives us the logical form in (489b). Crucially, we note that the expression in (489b) is truth-conditionally equivalent to the logical form in example (477) above, in which the intentional argument P was encoded within the lexical semantics of *try*.

- (489) a. $\llbracket \text{try to suppress the uprising} \rrbracket = \lambda e.\lambda w.\exists y[\text{try}(e)(w) \wedge \text{Theme}(e, y) \text{ in } w \wedge \forall w' \in INT_{w,e} [\exists e'[\text{suppress}(e')(w') \wedge \text{Theme}(e', \iota z[\text{uprising}(z)]) \wedge \text{Cause}(e, e') \text{ in } w']]]]$
- b. $\llbracket \text{the gov. try to suppress the uprising} \rrbracket = \lambda w.\exists e\exists y[\text{try}(e)(w) \wedge \text{Theme}(e, y) \wedge \text{Agent}(e, \text{gov}) \wedge \forall w' \in [\exists e'[\text{suppress}(e')(w') \wedge \text{Theme}(e', \iota z[\text{uprising}(z)]) \wedge \text{Cause}(e, e') \text{ in } w']]]]$

In approaching the *intention* argument of *try* from a decompositional perspective, we have provided a means by which *try* may combine with *intention*-denoting infinitives, while simultaneously accounting for the presuppositional status of the *intention* in the absence of an infinitival complement. Furthermore, baking the Cause predicate into the complement allows us to retain the causative nature of the relation between the *action* and *intention* components, while allowing the actual lexical definition of *try* to remain relatively simplistic.

6.4.5. Further complications

The final question in discussing the composition of *try* with its various potential complements concerns the existential closure of the theme, as well as the impossibility of realising both arguments simultaneously. To this latter point, we note that there is nothing *prima facie* to rule out the projection of both a theme y and an intentional complement P , such as in the hypothetical LF in (490).

- (490) $\llbracket \text{gov. try the abolition of workers' rights to suppress the uprising} \rrbracket =$
 $\lambda w. \exists e [\text{try}(e)(w) \wedge \text{Theme}(e, \text{abolition}) \wedge \text{Agent}(e, \text{gov}) \wedge \forall w' \in \text{INT}_{w,e} [\exists e'$
 $\quad [\text{suppress}(e')(w') \wedge \text{Theme}(e', \text{iz}[\text{uprising}(z)]) \wedge \text{Cause}(e, e') \text{ in } w']]]$

While the corresponding utterance to (490) is grammatical (as in (491a)), the infinitive here can be shown to be significantly larger than the infinitival complement to *try* (essentially as big as a typical purpose clause adjunct). For example, we find in (491b) that *in order* is possible in this environment and an overt *for*-marked subject may be realised within the clause. Furthermore, in (491c) we see that the infinitive in this environment will license a conflicting temporal modifier, unlike true infinitival complements to *try*.

- (491) a. The government tried the abolition of workers' rights to suppress the uprising.
 b. The government tried the abolition of workers' rights (in order) (for the state) to suppress the uprising.
 c. Last month, the government tried the abolition of workers' rights (in order) to increase tax revenue next year.

Unfortunately, we have no satisfying answer to this question. One potential possibility is to take the strong Neo-Davidsonian perspective such that all arguments are severed from the lexical semantics of a given verb (e.g. Parsons 1990; Lasersohn 1995). As such, existential closure of the theme argument y would cease to be an issue; any theme would presumably be introduced externally to the verbal semantics via some syntactic Theme projection. However, this strategy does not address the impossibility of realising both arguments simultaneously, and in fact may make it more difficult to account for. We will instead pursue a rather ad hoc strategy, involving two stipulations: (i) the non-finite clause headed by Op_{INT} projects an unvalued case feature, and (ii) the grammar makes available

some functionality to existentially close the internal arguments of verbs.

The concept of unvalued and uninterpretable syntactic features is not in and of itself a stipulation; a framework of (un)interpretable features is carefully constructed and defended in Adger (2003) and has seen robust use within the realm of minimalist syntax. Rather, the stipulation we are making here is that both DP objects and *Op*_{INT} infinitives bear an unvalued case feature, *ucase*. Furthermore, we follow Adger's proposal that feature-matching (by means of the derivational operation Agree, cf. Chomsky 2000, 2001) occurs under strictly local conditions. We provide Adger's definition for feature-matching locality in (492) below.

(492) *Locality of Matching*

Agree holds between a feature F on X and a matching feature F on Y iff there is no intervening Z[F].

(Adger 2003:178, ex. 55)

Likewise, Adger defines *intervening* as follows.

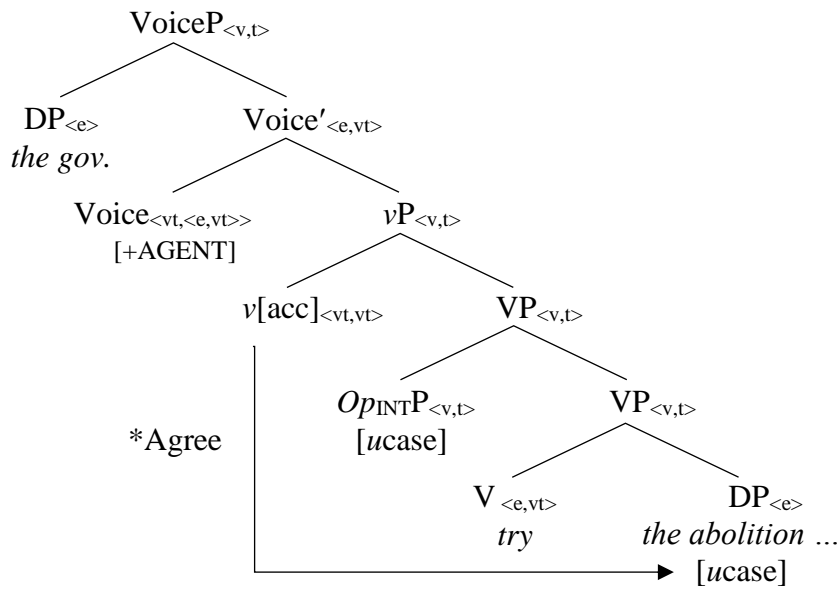
(493) *Intervention*

In a structure [X ... Z ... Y], Z intervenes between X and Y iff X c-commands Z and Z c-commands Y.

(Adger 2003:178, ex. 56)

The notion that both DP objects and VP modifiers containing *Op*_{INT} bear an unvalued case feature combined with the principles of *locality of matching* and *intervention* as defined in (492) and (493) ensures that only one may be realised in any given situation. Consider, for example, the hypothetical derivation of *the government tried the abolition of workers' rights to suppress the uprising* in example (357). This derivation is, intuitively, semantically interpretable and well-formed from a type-theoretic perspective. However, we find that the unvalued case feature *ucase* on the lower DP object cannot be valued for the [acc] feature borne by *v*, due to the fact that a *ucase* bearing *Op*_{INT}P intervenes between *v* and DP.

(494)



While appealing to case features may not be the most intuitive method in approaching this issue, we note that appealing to syntactic rather than semantic constraints captures the intuition that these hypothetical constructions are semantically sound. Furthermore, we propose that a similar syntactic constraint is necessary to explain the distinct but related *explanans* vs. *explanandum* phenomenon; why can the predicate *explain* not realise both simultaneously?

Next, we need some means of closing the internal argument position y encoded in the lexical semantics of *try*. To this end, we will employ the notion of an arbitrary operator ARB, in the sense of Ackema and Schoorlemmer (1994). For Ackema and Schoorlemmer, ARB presents a means of suppressing the underlying argument in a predicate's lexical conceptual structure (LCS) prior to mapping to syntax. In practice, the authors employ this operation to account for the suppression of agents in generic middle constructions. We will thus define a very simple operator ARB as in (495), whose function is to take a predicate P of type $\langle e,vt \rangle$ and existentially close the individual argument, returning a predicate of events (type $\langle v,t \rangle$).

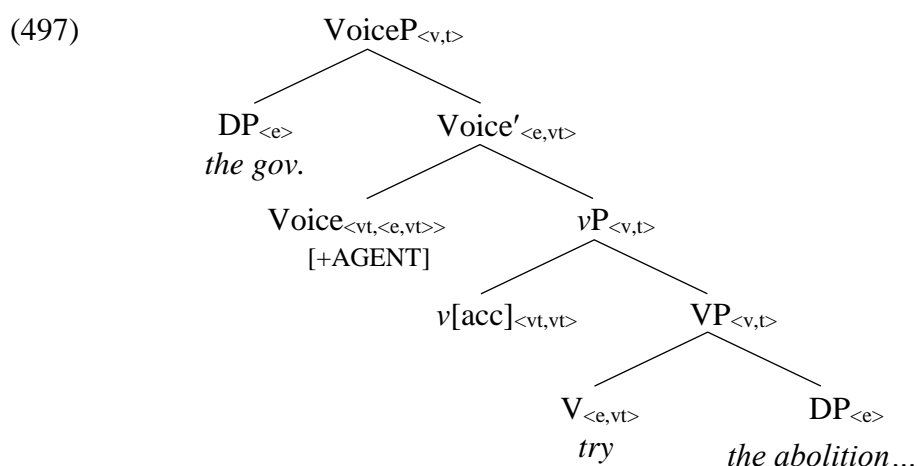
(495) $\llbracket \text{ARB} \rrbracket = \lambda P_{\langle e,vt \rangle} \lambda e. \lambda w. \exists y [P(e)(y) \text{ in } w]$

The utilisation of an arbitrary operator is not entirely unmotivated here. We note in (496) that *try* is readily acceptable in generic environments. Crucially, the arbitrariness in (496) is attributed to the *actions* that *John* performs, and not his *intentions*; the example below is compatible with a scenario in which *John* has a single specific intention/goal (for example, if *John's* intentions are to learn a foreign language, but he is simply terrible at it).

(496) John tries, bless him.

It has been observed as early as Chomsky (1964) that arguments with specific content *must* project. That is, in an example such as *burglars often steal*, there cannot be a specific stolen item in mind; the utterance is only compatible with an arbitrary interpretation of what is stolen. As such, example (496) must be a case of ARB assigned to the *action* argument of *try*.⁷⁰

With these tools in place, we may now demonstrate the type-theoretic derivation of both *try*+DP complement and *try*+infinitival complement. To the former, we observe in (497) that when *try* selects a DP object as its complement, the resulting derivation looks like a typical transitive construction. The predicate V merges first with its DP (which in this case denotes an event), and then with an [acc]-bearing *v* projection. Finally, a non-eventive Voice head introduces the agent in its specifier. We provide the logical form of (497) in (498).

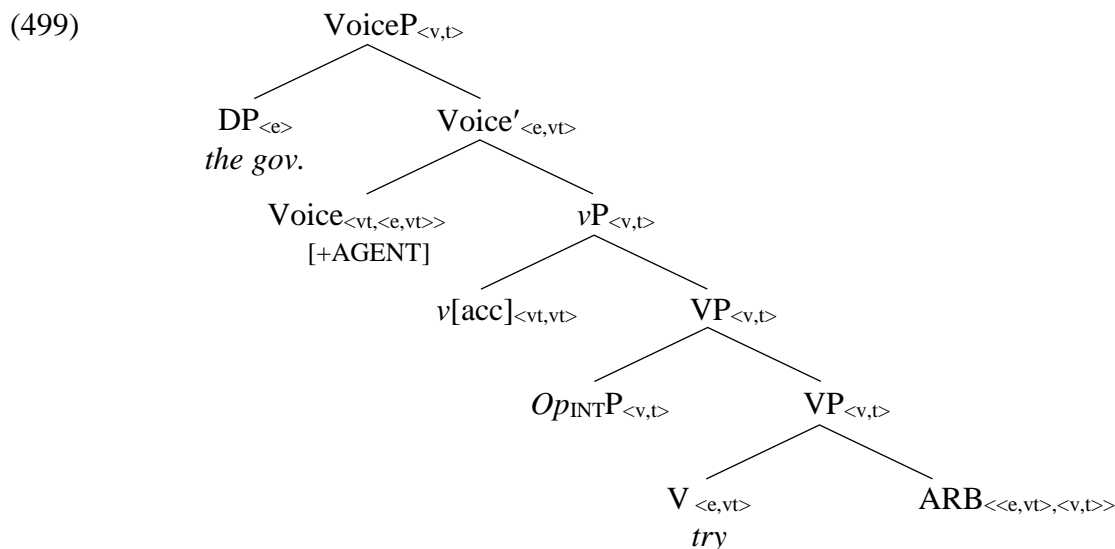


(498) \llbracket The government tried the abolition of workers' rights \rrbracket
 $= \lambda e.\lambda w[\text{try}(e)(w) \wedge \text{Theme}(e, \iota e''[\text{abolish-workers'-rights}(e'')])]$ in w
 $\wedge \text{Agent}(e, \iota x[\text{government}(x)])]$
 presupposes the intention to bring about some property P relevant to the goals of e in w .

Next, the derivation of *try* in its infinitive-selecting aspect will proceed slightly differently

⁷⁰ Incidentally, the availability of a specific intention in conjunction with the generic utterance in (496) supports the hypothesis that infinitival complements to *try* are not true arguments, in the strictest sense.

than the above. As we see in (499), we first allow *try* to combine with the operator ARB, which closes its internal argument position. The predicate then merges with the non-finite clause headed by *Op*_{INT}, which relates the *trying* event to an intended outcome by means of an underlying causative predicate. As above, *vP* merges to provide an accusative case feature, and VoiceP introduces an agent externally. We provide a logical form for this derivation in (500) below. Note that we assume that V-to-*v* movement will provide the correct surface word order.



(500) $\llbracket \text{The government tried to suppress the uprising} \rrbracket = \lambda e. \lambda w. \exists y [\text{try}(e)(w) \wedge \text{Theme}(e, y) \wedge \text{Agent}(e, ix[\text{government}(x)]) \text{ in } w \wedge \forall w' \in \text{INT}_{w,e} [\exists e' [\text{suppress}(e')(w') \wedge \text{Theme}(e', iz[\text{uprising}(z)]) \wedge \text{Cause}(e, e')]]]]$

Having formalised a semantic definition for the predicate *try*, as well as a semantic characterisation of its infinitival complement, we have successfully provided a compositional analysis of *try* in both nominal and infinitival complement environments. In the next section, we turn to the effects and implications of our analysis.

6.5. Effects and corollaries

In this section we will discuss the implications of the analysis developed in section 6.4 above. We begin in section 6.5.1 by demonstrating that our analysis correctly predicts the manifestation of obligatory exhaustive control in both nominal and infinitival environments, as well as the *overt embedded subjects* generalisation. Then in 6.5.2 we show that our account derives the strict simultaneity present in all instantiations of *try*.

Specifically, we argue that the simultaneity present in infinitival complement constructions results from the necessarily small structure of the infinitive, while the simultaneity in nominal complement constructions may be explained by more general principles of predication, namely with parameters of event-to-object mapping (in the sense of Krifka 1992).

6.5.1. Deriving EC and the overt embedded subjects generalisation

Beginning with the manifestation of obligatory control in the complement of *try*, we note that the interpretable control effect observed into nominal complements is readily explained by incorporating a sense of *performing* into the definition of *try*, as discussed in section 6.4.3. Likewise, this same principle explains the unavailability of overt embedded agents in compositional event nominal complements; one cannot *perform* an action carried out by another individual. For example, consider the data in (501). As observed in section 6.4.3, we find that any agent of a *perform*-class predicate must be interpreted as the agent of any event-denoting nominal complements (501a-c). Likewise, we note below that overt embedded agents are barred in these same environments (as in (501d-f)).

- (501) a. The mechanic_i tried [PRO_{i/*j} the installation of a new carburettor].
b. The mechanic_i performed [PRO_{i/*j} the installation of a new carburettor].
c. The mechanic_i carried out [PRO_{i/*j} the installation of a new carburettor].
d. The mechanic tried [the installation of a new carburettor (*by his assistant)].
e. The mechanic performed [the installation of a new carburettor (*by his assistant)].
f. The mechanic carried out [the installation of a new carburettor (*by his assistant)].

While a full investigation into the nature of *perform*-class predicates is beyond the scope of this thesis, the inclusion of *try* in that set of predicates provides some means of explaining the control-like properties it enforces onto its nominal complements. For now, we provide in (502) a meaning postulate which ensures that all *perform*-class predicates (including *try*) implicate the desired relationship between agent and theme; we leave a full semantic formalisation of *perform*-class verbs to future work.

(502) *Perform-class predicates*

For any *perform-class* predicate P with agent x and theme y , $P(x)(y) = x$ does y .

Moving on to infinitival complements, we argue that our compositional analysis of *try* and its clausal complement provides a natural explanation for the observed obligatory EC relation in this environment. As with our aspectual predicate analysis in chapter 5, our goal is to capture the effects of exhaustive control as an inherent property of our compositional semantics. To this end, we again appeal to the notion of direct control, as defined by Kratzer (2005) as an *event of causing*. We provide her definition below.

(503) *Events of causing other events*

An event e is an event of causing an event e' iff e is the sum of all the members of some causal chain C with maximal element e' .

Assuming that the Cause predicate introduced by CAUSE and embedded beneath Op_{INT} encodes an *event of causing* relation, inherent control follows naturally. To be explicit, we say that for any *trying* event e and intended outcome event e' , such that $Cause(e, e')$, e and e' are related by a structural parthood relation. Specifically, we define e' as the maximal sub-event of e . As such, any argument introduced by Voice as the agent of e will likewise be the agent of e' just in case $Cause(e, e')$.⁷¹ Consider this line of argumentation in relation to the logical form in (504), for the utterance *the government tried to suppress the uprising*.

$$(504) \quad \begin{aligned} & \llbracket \text{The government tried to suppress the uprising} \rrbracket \\ & = \lambda e. \lambda w. \exists y [\text{try}(e)(w) \wedge \text{Theme}(e, y) \wedge \text{Agent}(e, \iota x [\text{government}(x)])] \text{ in } w \\ & \quad \wedge \forall w' \in \text{INT}_{w,e} [\exists e' [\text{suppress}(e')(w') \wedge \text{Theme}(e', \iota z [\text{uprising}(z)]) \\ & \quad \quad \quad \wedge \text{Cause}(e, e') \text{ in } w']]] \end{aligned}$$

We first introduce *the government* as the agent of the *trying* event e . Then, we introduce the intentional VP under Op_{INT} such that for all worlds compatible with the goals of e , there is an event e' which is a *suppressing the uprising event* and e is an *event of causing* e' in w' . It therefore follows without further stipulation that in all worlds compatible with e , for all events e' , e' is a maximal sub-event of e and the agent of e is also the agent of e' by virtue of predication.

Likewise, if Op_{INT} combines with a VoiceP rather than a CAUSE-P, it follows from

⁷¹ This follows from the sum homomorphism of thematic relations; see chapter 5 for discussion.

the above that the only possible subject for the embedded VoiceP is a null pronoun PRO that is obligatorily co-referent with the agent of *try*. Consider, for example, the logical form in (505) involving the projection of an independent agent in the complement clause to *try*. We note, as above, that it follows from the definition of an *event of causing* that in all worlds compatible with e , e' is a maximal sub-event of e and the agent of e is also the agent of e' . Thus, the projection of another agent within the embedded VoiceP results in a violation of thematic uniqueness, such that e' ends up with two logical agent arguments.

$$(505) \quad *[[\text{The government tried for the state to suppress the uprising}]] \\
= \lambda e. \lambda w. \exists y [\text{try}(e)(w) \wedge \text{Theme}(e, y) \wedge \text{Agent}(e, \iota x [\text{government}(x)]) \text{ in } w \\
\wedge \forall w' \in \text{INT}_{w,e} [\exists e' [\text{suppress}(e')(w') \wedge \text{Theme}(e', \iota z [\text{uprising}(z)]) \\
\wedge \text{Agent}(e', \iota \alpha [\text{state}(\alpha)]) \wedge \text{Cause}(e, e') \text{ in } w']]]]]$$

We have thus derived both the manifestation of exhaustive control, as well as the overt embedded subjects generalisation as it applies to non-finite complement clauses. To the former, we note that the notion that direct causation invokes an *event of causing* ensures that the agent of the causal chain will be interpreted as the agent of each sub-event in the causal chain, including the maximal sub-event. Likewise, this principle bars any embedded subjects that are not co-referent with the subject of *try*; anything else results in a violation of thematic uniqueness. As in chapter 5, we assume that the binding of PRO in these environments is truth-conditionally vacuous.

6.5.2. Deriving simultaneity

While similar in outward appearance, we observe in this section that the required simultaneity between *try* and its complement is derived very differently in the nominal and infinitival domains. Beginning with the temporal properties of complement VP/VoicePs, we again adopt the assumption from Pancheva and von Stechow (2004) that the role of any functional aspectual projection is to existentially bind an event variable relate its run-time to some reference time $t \in D_i$. Likewise, we re-define our adopted semantics for the perfective in (506): perfective acts as a function from predicates of events to predicates of times (type $\langle i, t \rangle$).

$$(506) \quad \llbracket \text{PERFECTIVE} \rrbracket = \lambda P_{\langle v, t \rangle}. \lambda t_i. \exists e [P(e) \wedge \tau(e) \subset t]$$

Any phrasal projection of AspectP denoting a predicate of times is thereby predictably incompatible with our denotation for Op_{INT} in (487) above; Op_{INT} calls for a predicate of events. As was the case with our aspectual analysis in chapter 5, this incompatibility has the desirable consequence of correctly predicting the infelicity of functional auxiliaries within the complement clause which, by hypothesis, occur above Asp (i.e., *have, be, ...*).

- (507) a. *The government tried to be suppressing the uprising.
 b. *The mechanic tried to have repaired the car.

Furthermore, the fact that Op_{INT} selects for a predicate of events necessarily restricts the maximal syntactic size of its complement to that of a VoiceP. As such, we predict that the only time argument realised in any given *try* construction will be the one introduced by matrix Aspect. Assuming again that temporal modifiers such as *yesterday* restrict a reference time to the appropriate set of time intervals (as in (382)), we naturally derive the *tense mismatch* generalisation as it applies to non-finite complement clauses of *try*. Like in the domain of aspectual predicate constructions, the ungrammaticality of (383a) may be understood as the ascription of two mutually exclusive reference time constraints on the only available time variable t , as illustrated in (383b).

$$(508) \quad \llbracket \text{yesterday} \rrbracket = \lambda P_{\langle i,t \rangle} . \lambda t. P(t) \wedge t \subseteq \text{yesterday}$$

- (509) a. *Yesterday, John tried to run tomorrow.
 b. $= \lambda t. \lambda w. \exists e \exists y [\text{try}(e)(w) \wedge \text{Theme}(e, y) \text{ in } w \wedge \text{Agent}(e, \text{John}) \text{ in } w$
 $\wedge \forall w' \in \text{INT}_{w,e} [\exists e' [\text{run}(e')(w') \wedge \text{Cause}(e, e') \text{ in } w']] \wedge \tau(e) \subset t$
 $\wedge t \subseteq \text{yesterday} \wedge t \subseteq \text{tomorrow}]$

As such, the *tense mismatch* generalisation and the empirical observation that *try* enforces strict simultaneity into its clausal complements follows from the logical contradiction present in (383b), which follows naturally from our treatment.

Unlike clausal complements, we propose that the simultaneity observed between *try* and any event-denoting nominal complement results from the more general properties of thematic relation in extensional environments. Consider, for example, the data in (510), which includes verbal predicates from a variety of different verb classes (in the sense of Levin 1993) in the environment of a compositional event nominal complement. While the semantic class/content of these verbs may be wildly different from one another, they are all

similar in that they are all non-intentional. Crucially, we find that in each case the event-denoting DP may not realise a temporal modifier that conflicts with a modifier in the matrix clause.

- (510) a. Yesterday, John observed [the inspection of the factory (*today/*the day before)].
 b. Yesterday, John lead [the inspection of the factory (*today/*the day before)].
 c. Yesterday, John passed [the inspection of the factory (*today/??the day before)].
 d. Yesterday, John escaped [the inspection of the factory (*today/*the day before)].

As such, rather than postulate some unique relation between *try* and its DP, we will instead appeal to the general mapping parameters that govern the relation between extensional predicates and their thematic objects. The particular framework adopted here will be that of Krifka (1992), and will minimally exploit Krifka's principles of *uniqueness of objects*, *mapping to objects* and *mapping to events* as defined in (511-513), respectively.

(511) *Uniqueness of Objects*

$$\forall R [UNI-O(R) \leftrightarrow \forall e, x, x' [R(e, x) \wedge R(e, x') \rightarrow x = x']]$$

(512) *Mapping to Objects*

$$\forall R [MAP-O(R) \leftrightarrow \forall e, e', x [R(e, x) \wedge e' \leq e \rightarrow \exists x' [x' \leq x \wedge R(e', x')]]]$$

(513) *Mapping to Events*

$$\forall R [MAP-E(R) \leftrightarrow \forall e, x, x' [R(e, x) \wedge x' \leq x \rightarrow \exists e' [e' \leq e \wedge R(e', x')]]]$$

(Krifka 1992:39)

As a preliminary, the *uniqueness of objects* as defined in (511) ensures that a given event is related to a specific and unique object. By way of illustration, Krifka notes that in a *drinking a glass of wine* event, the act of *drinking* is uniquely related to a specific *glass of wine*, and to no other object. For our purposes, an event of *trying the abolition of workers' rights* relates the action associated with *trying* to a unique and specific *abolition* event in the world.

The *mapping to objects* principle in (512) is such that, for all events *e* with thematic

object x such that $R(e, x)$, for any event e' that is a sub-event of e there is an individual x' that is a sub-part of x , and $R(e', x')$. Going back to Krifka's explanation, the *mapping to objects* parameter correctly captures the intuition that every part of a *drinking a glass of wine* event corresponds to a particular part of that glass of wine.⁷² Finally, the *mapping to events* principle as defined in (513) has the effect that, for all events e with thematic objects x such that $R(e, x)$, for any individual x' that is a sub-part of x there is an event e' that is a sub-event of e , and $R(e', x')$. In terms of our *drinking a glass of wine* example, this definition ensures that every relevant part of *a glass of wine* is related to a corresponding *drinking* sub-event.

With these definitions in hand, we propose the enforced simultaneity observed between *try* and any event-denoting nominal complements is a direct result of the *mapping to objects/events* principles as defined by Krifka (1992). Specifically, we argue that any overt temporal mismatch between the *trying* event and the event DP violates the *mapping to objects* and *mapping to events* principles, as defined in (512,513). To illustrate, consider the ungrammatical utterance in (514).

(514) *Yesterday, the mechanic tried [the installation of a new carburettor tomorrow].

As the thematic object of *try*, we understand the *installation of a new carburettor* event to be the specific and unique thematic object of the *trying* event, as per (511). However, the definition in (512) demands that every part of the *trying* event be logically mapped to a corresponding part of its thematic object. Assuming that compositionally derived event DPs may be measured according to event run-time (given the temporal trace function $\tau(e)$), then the infelicity of (514) becomes clear. Namely, if the *trying* event e is such that $\tau(e)$ is limited to *yesterday* and the *installation* event e' is such that $\tau(e')$ is limited to *tomorrow*, then there is no part of the *trying* event e that can be properly mapped to its thematic object. The mutual exclusivity of *yesterday* and *tomorrow* furthermore ensures a violation of the *mapping to events* principle, such that there is no part of *the installation* in (514) that can be logically mapped to the corresponding *trying* event.

The strategy employed here makes the stronger prediction that *try* constructions involving compositional event DPs will not permit a temporal modifier within the nominal

⁷² Although Krifka's argumentation here concerns the incremental-theme predicate *drink*, the *mapping to objects* parameter is equally applicable to non-incremental environments. For instance, every part of a *performing an aria* event corresponds to a particular part of *an aria*. The same may be said of *examining a patient* or *inspecting a factory*.

which properly contains the temporal reference of a temporal modifier in the matrix clause. That is, if the event run-time of matrix *try* is limited to *on Monday*, then the event run-time of any event nominal complement cannot be limited to some timeframe which properly contains *Monday*, such as *this week*. While, such a construction would seemingly satisfy the *mapping to objects* parameter defined in (512), it would violate the *mapping to events* parameter. Specifically, while every part of a *trying* event that occurs *on Monday* could be logically mapped to a corresponding part of its object, not every part of an event nominal object that occurs *this week* could be logically mapped to a corresponding part of a *trying* event that occurs *on Monday*. As illustrated in (515), this prediction is borne out.

(515) a. *On Monday, the mechanic tried [the installation of a new carburettor this week].

b. *This week, the government tried [the abolition of workers' rights this month].

Thus, we have provided a means of understanding the strict simultaneity observed in *try* constructions across complement domains. For infinitival complements, we showed that the impossibility of conflicting temporal modifiers follows directly a semantic analysis of temporal modifiers as predicates of times, along with the obligatorily reduced nature of *try* infinitives. Furthermore, we demonstrated that the simultaneity found in nominal complement environments follows directly from the general properties of thematic arguments, specifically regarding event-to-object mapping.

6.6. A note on the status of gerundive complements

Before concluding this chapter, it would be useful to consider the third potential complement type that English *try* may combine with: the gerund. As per section 6.4.1, we know that the entailment pattern of a *try* construction changes depending on the syntactic status of its complement. Specifically, if the complement is an event-denoting DP, that event is entailed as a real, completed event in the world. On the other hand, if the complement is a non-finite clause, the event it describes is not entailed (see in particular examples (436,437)). This observation led to an analysis in which DP objects of *try* were characterised as *bona fide* thematic arguments (denoting *actions*), while infinitival complements (denoting *intentions*) were analysed as predicate modifiers.

We observe in (516) that gerundive complements to *try* are ambiguous regarding whether the event they describe is entailed or not. Given our analysis of DP and clausal

complements to *try*, we contend that the entailment pattern in (516b) reveals the ascription of the *action* argument to the gerund, while the pattern in (516c) implicates the gerundive complement as the *intention* of the predicate instead.

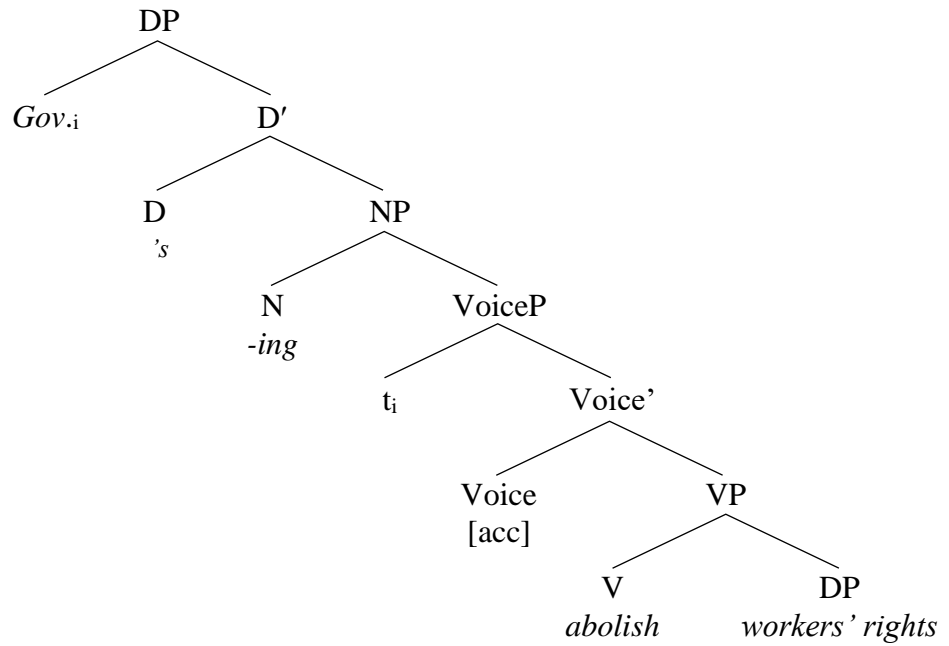
- (516) a. The government tried abolishing workers' rights.
b. \Rightarrow The government abolished workers' rights. *action reading*
c. \nRightarrow The government abolished workers' rights. *intention reading*

The precise nature of the English gerund (or the various types of gerundive phrases that make up this category) has long been a contentious issue within the generative tradition (cf. Chomsky 1970; Reuland 1983; Abney 1987; Pires 2001, 2007, and references cited therein). As such, we have no intentions here of providing any formal account of the syntactic or internal semantic structure of the gerundive complements to *try*. We will instead discuss the potential implications presented by the data in (516), and suggest that the variable entailment properties above reveal a type ambiguity in verbal gerunds, such that they may denote a predicate of events (type $\langle v, t \rangle$) or an event *per se* (type $\langle v \rangle$).

Considering first the example in (516b), we note that the entailment of the embedded event implies that the gerund in this example merges as a thematic object of the predicate *try*. According to the semantic analysis of *try* outlined in section 6.4.3, this may occur straightforwardly by means of the relational Theme predicate in the lexical semantics of the verb. However, in order to saturate the thematic argument position, it must be assumed that the gerund in (516b) denotes an event *per se* of type $\langle v \rangle$.⁷³ We note that this assumption is largely in line with the account put forward in Abney (1987), such that verbal gerunds with genitive marked subjects (henceforth, *Poss-ing* gerunds) involve the nominalisation of an agent introducing VoiceP, as illustrated in (517). Note that, for Abney, Voice (or *v*) is responsible for both the introduction of the external argument as well as the assignment of structural (accusative) case.

⁷³ Given our semantic analysis of compositional nominalisations in chapter 4, and the overtly derivational nature of verbal gerunds, we ignore here the logical possibility that the gerund denotes an individual of type $\langle e \rangle$.

(517)



On the assumption that the N head hosting the gerundive affix *-ing* is semantically vacuous, and that the determiner encodes the unique iota operator (as defined in chapter 4), the gerund in (517) will have the following logical form.

(518) $\llbracket(517)\rrbracket = \iota e [\text{abolish}(e) \wedge \text{Theme}(e, \iota y[\text{workers}'\text{-rights}(y)])]$
 $\wedge \text{Agent}(e, \iota x[\text{government}(x)])]$

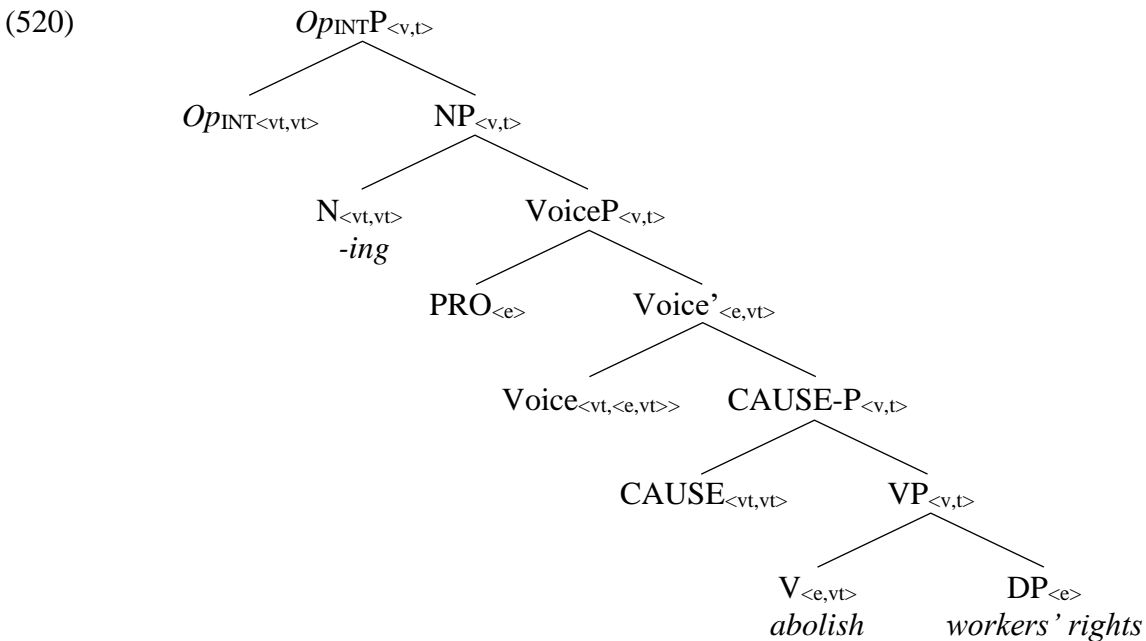
Note that the denotation in (518) intuitively captures the meaning of *Poss-ing* gerunds. That is, in the utterance *the government's abolishing workers' rights was surprising*, we understand that the unique abolishing event whose theme was *workers' rights* and whose agent was *the government* was a matter of some surprise.

Turning back to our *try* constructions, we observe that *Poss-ing* gerunds that denote events *per se* may predictably saturate the thematic Theme position encoded in the lexical semantics of *try*. We assume, as in section 6.4.3, that events *per se* of type $\langle v \rangle$ are generally compatible with functions from individuals of type $\langle e \rangle$. Furthermore, our characterisation of *try* as a *perform*-class predicate ensures that any external argument introduced by embedded Voice will be a co-referent PRO subject. In example (519) we provide the logical form for the utterance in (516a) with the entailment pattern in (516b).

(519) $\llbracket \text{The gov. tried abolishing workers' rights} \rrbracket = \lambda w. \exists e [\text{try}(e)(w)$
 $\wedge \text{Theme}(e, \iota e' [\text{abolish}(e')(w) \wedge \text{Theme}(e', \iota y[\text{workers'-rights}(y)])])$
 $\wedge \text{Agent}(e', \iota x[\text{government}(x)])]$

presupposes the intention to bring about some property *P* relevant to the goals of *e* in *w*.

Moving on to the entailment pattern in (516c), we note that this reading of the gerundive complement implies that the gerund here merges as a predicate modifier of the verb, rather than as its argument (as discussed in 6.4.4). As such, we must assume (i) the gerundive complement to *try* contains a causative verbal layer, and (ii) that the gerundive complement to *try* is significantly smaller than so-called ‘clausal gerunds’, such that they may combine with our operator *Op_{INT}* (contra Pires 2001, 2006). We thus assume the type-driven syntactic structure in (520) as the (maximal) structural constitution of gerunds appearing in *try* constructions.



The projection of CAUSE-P in (520) is mandated by the selectional restrictions of *Op_{INT}*, and if *Voice* projects, it must take a null subject *PRO* (given our discussion in section 6.5.1). We furthermore assume that the head *N* is semantically vacuous, essentially currying the function denoted by *VoiceP* up the structure. While affixation by *N* typically leads to interaction with the determiner system, the *NP* above constitutes a licit argument for *Op_{INT}*, as it denotes a predicate of *abolishing* events. At this stage, *Op_{INT}* may combine with *try* via *predicate modification*, and subsequent projection of matrix *Voice* will yield the

denotation in (521), representing the logical form of (516a) with entailment pattern (516c).

$$\begin{aligned}
 (521) \quad & \llbracket \text{The gov. tried abolishing workers' rights} \rrbracket \\
 & = \lambda e. \lambda w. \exists y [\text{try}(e)(w) \wedge \text{Theme}(e, y) \wedge \text{Agent}(e, \iota x [\text{government}(x)]) \text{ in } w \\
 & \quad \wedge \forall w' \in \text{INT}_{w,e} [\exists e' [\text{abolish}(e')(w') \wedge \text{Theme}(e', \iota z [\text{workers'-rights}(z)]) \\
 & \quad \quad \quad \wedge \text{Cause}(e, e') \text{ in } w']]]]
 \end{aligned}$$

In summary, we have hypothesised that the ambiguity present in *try* +gerundive complement constructions is predictable on our analysis of *try*. Namely, when the event denoted by the gerund is entailed, the gerund merges as the *action* argument of *try*, by means of an underlying thematic Theme predicate. Conversely, when the event denoted by the gerund is *not* entailed, the gerund denotes the *intention* of the *trying* event, and merges via *predicate modification*. We leave a full empirical investigation of this hypothesis to future work.

6.7. Conclusion

In this chapter we have again defended the hypothesis that both nominal and infinitival complements to control predicates may be accounted for in a unified manner, in this case regarding the control predicate *try*. We began in section 6.2 by briefly considering the nature of the predicate *explain*, and the long-held tradition that this verb may take one of two potential arguments: an *explanans* or *explanandum*. Then in 6.3 we provided a preliminary overview of recent theoretical discussions and analyses concerning the predicate *try*. We considered the *continuation branch* analysis of Sharvit (2003), as well as the accounts of Grano (2011, 2017a), which drew on the semantics of the progressive aspect (Condoravdi 2009). Ultimately, none of these frameworks provided an intuitive method of incorporating compositional event nominal complements, and were thus rejected.

The rest of the chapter motivated and developed a compositional analysis of *try* such that *try* may realise one of two potential arguments: an *action* or an *intention* (in this way mirroring the behaviour of *explain*). Motivation for this view came from the different entailment/presuppositional patterns observed in infinitival vs. nominal environments. We thus proposed that *action* argument (exemplified by event DPs) merge as typical thematic argument of *try*, possessing no intentional characteristics. Furthermore, we argued that *intention* arguments are not in fact arguments of *try* itself, but rather merge as predicate modifiers. Furthermore, the causative and intentional elements of non-finite complements

to *try* were hypothesised to be syntactic components contained within the embedded clause.

Our account had a number of desirable consequences. First, it correctly derived the variable entailments and presuppositions that occur in various *try* constructions. Next, for infinitival complements to *try*, we demonstrated that the obligatory exhaustive control and enforced simultaneity resulted from the lexical semantics of *try* combined with the necessarily small structural composition of the complement clause. Furthermore, for nominal complements, obligatory control was assumed to follow from its classification as a *perform*-class predicate, and the simultaneity was shown to result from general principles governing the mapping of events to their thematic objects. Finally, we observed an ambiguity in gerundive complements to *try* that is predictable on our two-argument analysis of the predicate, given certain structural assumptions regarding the internal composition of *Poss-ing* gerunds.

7. REMARKS ON TEMPORAL ORIENTATION AND STRUCTURAL CONTROL

7.1. Introduction

In this final chapter we turn away from the theoretical machinery underlying exhaustive control to (briefly) consider partial control and its associated effects. Recall that, although PC predicates enforce no salient obligatory control relation into nominal environments, they do enforce a particular temporal interpretation. Namely, PC predicates which select future-oriented infinitives exclusively enforce future-orientation in nominal complements. Likewise, PC predicates which select past-oriented infinitives enforce past-orientation in NPs. As such, much of our discussion below will be concerned with contemporary theoretical analysis of infinitival temporal orientation, in order to determine which particular account may generalise most readily to the nominal domain. We begin in section 7.2 with a note on the necessarily structural nature of partial control. In 7.3 we evaluate Pearson's (2013, 2016) lexical semantic analysis of temporal orientation in PC predicate constructions in light of the nominal data. In section 7.4 we present a similar evaluation of Wurmbrand's (2014) syntactic analysis of temporal orientation in future-oriented infinitival complements.

7.2. A note on structural control

Before we present our discussion of the temporal properties of noun phrases, a brief note on the nature of PC is in order. In adopting Wurmbrand's (2002) syntactic vs. semantic division of labour, along with Stiebels' (2007) typological distinction between inherent and structural control, we implied that PC constitutes a distinctly syntactic phenomenon. This implication was supported by the observation that, unlike EC predicates, PC predicates fail to enforce any salient control relation into derived nominal complements. That is, the lack of control in PC predicate constructions involving nominal complements is expected if PC is tied to a particular structural phenomenon in infinitival complement environments.

However, although our observations in chapter 2 tell us something about what PC is *not* (e.g., not inherent), they do not provide much in the way of an explanation of what PC actually *is*. There are a multitude of theoretical devices that can and have been used to capture obligatory control phenomena by syntactic means, including PRO binding, A-movement, agreement, or a combination thereof. For example, Wurmbrand (2002) keys the

occurrence of PC to the distribution of a bound PRO subject in non-finite clausal complements (recall that the binding of PRO proceeds vacuously in exhaustive/inherent control contexts). It is unclear, however, if a PRO-centric approach to structural control could be reconciled with more recent analyses of PRO as an impoverished minimal pronoun (see e.g., Sigurðsson 2008; Kratzer 2009).

One contemporary account of the EC/PC divide which captures the distinctly structural nature of PC comes from Landau (2015), who argues that the attitudinal predicates which give rise to PC relations necessarily select a complement with a CP layer. In particular, Landau's account employs an embedded non-finite clause containing a minimal pronoun PRO which projects up to a particular C head designated for obligatory control (C^{OC}). The CP headed by C^{OC} includes a logophoric centre containing a concept generator G (in the sense of Percus and Sauerland 2003a) which necessarily enforces an obligatory *de se* interpretation in the context of C^{OC} .⁷⁴ As such, Landau's account represents an analysis of PC which relies on distinctly clausal phenomena without depending on the properties of PRO specifically.

While the present study is unable to provide an adequate answer as to what mechanisms are responsible for the manifestation of PC, it does provide a criterion that must be met by such mechanisms. Namely, PC implicates a derivation that is significantly independent from the derivation of EC, and furthermore must result (at least partly) from structural phenomena within the clausal left-periphery. Future inquiry into structural control could conceivably focus on the cross-linguistic manifestation of PC in nominal/mixed categories, particularly in languages with productive nominalisation processes that target distinctly clausal structures (e.g., Turkish). Comparative study to this effect may shed light on the precise functional projection(s) implicated in the derivation of structural control.

7.3. Deriving temporal orientation semantically: Pearson 2016

In this section we will explore the implications of our observations in chapter 2 for lexical semantic models of deriving control and temporal orientation in PC predicate environments. Specifically, we will evaluate Pearson's (2013, 2016) lexical model of partial control in order to assess its application to nominal complement configurations. We

⁷⁴ This is a gross oversimplification of Landau's account, which critically relies on recent theoretical advancements in the ascription of attitudes *de re* and *de se*. For further discussion, see Landau 2015:41-46, as well as Schlenker 2003; Anand 2006; Pearson 2013.

will find that, although her exploitation of world/time extensions within the lexical semantics of PC predicates generalises well to nominal environments, her model does not straightforwardly predict the lack of control in PC predicate constructions.

7.3.1. PC predicates as modal quantifiers

Following a long tradition of theoretical analysis of attitude reports (Lewis 1979; Chierchia 1989; Abusch 1997; Percus and Sauerland 2003; Anand 2006; Stephenson 2007, 2010a, 2010b, a.o.), Pearson (2013, 2016) adopts the view that attitudinal PC predicates are modal quantifiers, quantifying specifically over world/time/individual triples. Her analysis is motivated by the obligatory *de se* interpretation of any PRO embedded beneath an attitude control verb, and is framed within the property view of controlled infinitives.

Attitude predicates, such as *want*, *promise* and *expect*, obligatorily express attitudes *de se* in control configurations (Morgan 1970; Chierchia 1989a). As defined in example (522), the attitude *de se* reflects the attitude holder's *awareness* that the attitude she expresses is *about* herself.

- (522) An attitude *de se* is an attitude – a belief, desire, expectation, etc. – that has the following properties:
- a. The attitude is about the attitude holder. (aboutness condition)
 - b. The attitude holder is aware that the attitude is about herself. (awareness condition)

(Pearson 2016:694)

The examples in (523) below provide an illustration of the obligatory nature of *de se* ascription in attitudinal control constructions. In (523a), although the attitude expressed by the embedded infinitive is about the attitude holder (satisfying the *aboutness condition*, see (522a)), the context ensures that the attitude holder is unaware of this fact, thereby violating the *awareness condition* defined in (522b). Contrast the infelicity of (523a) with the acceptability of the finite complementation construction in (523b), which does not induce obligatory *de se* ascription.

- (523) CONTEXT: John is an amnesiac. He reads a linguistics article that he himself wrote, although he has forgotten this fact. Impressed, he remarks, 'the author of this paper will become rich and famous. Unfortunately, I will not.'

- a. #John expects [PRO to become rich and famous].
- b. John expects [that he will become rich and famous].

(Pearson 2016:695)

Pearson's primary objective, then, is to capture the obligatory *de se* reading of PRO within the lexical semantics of the selecting attitudinal control predicate. Her proposal is couched in a framework that treats controlled infinitives (and gerunds) as semantic properties, rather than as propositions (see e.g., Bach 1979; Williams 1980; Chierchia 1984, 1989b, 1989a; Dowty 1985; Lebeaux 1985, among many others). Example (524) provides a preliminary LF representation for the utterance in (523a), assuming the status of the infinitive as a property of individuals. Note that PRO here denotes a lambda abstracted variable, rather than a bound co-referential pronominal element.

(524) $[_{CP1} \lambda w_1 [_{w_1} \text{John expects } [_{CP2} \lambda x_2 \lambda w_3 [_{IP} w_3 \text{PRO}_2 \text{ to become rich and famous}]]]]]$

(Pearson 2016:695)

The lambda abstractor over world variables in the left-periphery of the embedded CP binds the co-indexed world variable w_3 within its scope. Likewise, the lambda abstractor over individuals obligatorily binds PRO, resulting in an infinitive which expresses a property of individuals (type $\langle e, \langle s, t \rangle \rangle$, Pearson 2016).

Given this assumption regarding the semantic status of controlled infinitives, Pearson's account requires a lexical semantic analysis of attitudinal control predicates such that the predicate selects for both the attitude holder as well as a property of individuals. To this end, Pearson employs the notion of *doxastic alternatives* (see Hintikka 1969, and our discussion in chapter 6) to represent the set of possible worlds ranged over by the attitude holder. Furthermore, Pearson follows Lewis (1979) and Chierchia (1989a) in assuming that an attitude holder's doxastic alternatives not only include the set of possible candidate worlds, but also the set of candidate individuals representing the attitude holder in a given alternative world. That is, the set of doxastic alternatives $\text{Dox}_{x,w}$ consists of the set of world/individual pairs $\langle w', y \rangle$ which the attitude holder x takes to be suitable candidates for the real world w and herself (as illustrated in (525)).

(525) *Doxastic Alternatives: Lewis/Chierchia-style*

$\text{Dox}_{x,w} = \{ \langle w', y \rangle : \text{it is compatible with what } x \text{ believes in } w \text{ for } x \text{ to be } y \text{ in } w' \}$

(Pearson 2016:696)

This treatment of doxastic alternatives as world/individual pairs rather than just candidate worlds provides some purchase on the obligatory nature of *de se* ascription in attitudinal predicate constructions. Consider first the lexical entry for the verb *believe* in (526). Here we see that *believe* selects a property of individuals P , an attitude holder x and a world w , and ensures that for all world/individual pairs $\langle w',y \rangle$ that are members of the set of doxastic alternatives of x , P holds of y in w' . Note that in non-*de se* contexts, the property view of predicates of propositional attitude would presumably require vacuous lambda binding within the embedded CP.

(526) *Lexical entry of believe: Lewis/Chierchia-style*

$$\llbracket \text{believe} \rrbracket = \lambda P_{\langle e(st) \rangle} . \lambda x_e . \lambda w_s . \forall \langle w',y \rangle [\langle w',y \rangle \in \text{Dox}_{x,w} \rightarrow P(y)(w')]$$

(Pearson 2016:697)

Pearson demonstrates that the analysis in (526) may be extended to the control construction in (523a), involving the predicate *expect*. First, Pearson defines the lexical entry of *expect* as in (527), invoking a specific set of doxastic alternatives which she labels *expect*-alternatives ($\text{Expect}_{x,w}$). We provide Pearson's semantic denotation for the relevant *expect* construction in (528). In (528b) we see that the embedded infinitive CP2 comes to denote a property of individuals, such that some x is rich and famous in some w . Critically, in (528c) we find that *expect* necessitates that the embedded property hold of all world/individual pairs within the attitude holder's *expect*-alternatives. Recall that the individual component of an attitude holder's *expect*-alternatives constitutes her alternative candidate selves within alternative candidate worlds. As a result, obligatory *de se* ascription results from the exhaustive relationship between property P and all alternative candidate selves y in candidate worlds w' within the set of *expect*-alternatives.

(527) *Lexical entry of expect*

$$\llbracket \text{expect} \rrbracket = \lambda P_{\langle e(st) \rangle} . \lambda x_e . \lambda w_s . \forall \langle w',y \rangle [\langle w',y \rangle \in \text{Expect}_{x,w} \rightarrow P(y)(w')]$$

(528) a. $[_{CP1} \lambda w_1 [w_1 \text{ John expects } [_{CP2} \lambda x_2 \lambda w_3 [_{IP} w_3 \text{ PRO}_2 \text{ to become rich and famous}]]]]]$

b. $\llbracket \text{CP2} \rrbracket = \lambda x . \lambda w . x \text{ is rich and famous in } w$

c. $\llbracket \text{CP1} \rrbracket$

$$= \lambda w . \forall \langle w',y \rangle [\langle w',y \rangle \in \text{Expect}_{\text{John},w} \rightarrow y \text{ become rich and famous in } w']$$

The infelicity of (523a) is therefore expected, given the lexical entry for *expect* in (527). Namely, given John’s amnesia and his contextual belief-state, there is at least one world/individual pair in the set of John’s *expect*-alternatives in which the embedded property does not hold of his alternative candidate self, thereby violating the meaning requirements of the predicate.

Having built the necessary *de se* ascription into the semantics of attitudinal control predicates, Pearson refines her analysis in order to account for the appropriate temporal orientation in tandem. Following Abusch (1997), Pearson assumes that a given attitude holder’s mental state includes not only suitable candidates for herself, but also candidates for the actual time – the attitude holder’s *subjective now*. This hypothesis is supported by the fact that when the example in (529) is uttered at 4 pm, Bill’s belief state may be mistaken about the time without causing ungrammaticality (Pearson 2016:699).

(529) Bill believes that it is 3 pm.

Given that there is no possible world in which 4 pm is 3 pm, there must be some semantic representation of whatever time Bill thinks it is independent from the candidate world in which he locates himself. To this end, Pearson proposes that an attitude holder’s set of doxastic alternatives also includes a time interval variable *t* (of type $\langle i \rangle$). As such, we now define the set of an attitude holder *x*’s doxastic alternatives as the set of world-time-individual triples $\langle w', t', y \rangle$ such that *y* is a suitable candidate for *x* in *w'* at *t'*. Pearson provides the lexical semantic denotation for the predicate *believe* in (530); note that we now take embedded non-finite CPs to denote properties of type $\langle e \langle i \langle s, t \rangle \rangle \rangle$.

(530) *Lexical entry of believe: Pearson 2016*

[[believe]]

= $\lambda P_{\langle e \langle i \langle s, t \rangle \rangle \rangle} . \lambda x_e . \lambda t_i . \lambda w_s . \forall \langle w', t', y \rangle [\langle w', t', y \rangle \in \text{Dox}_{x, t, w} \rightarrow P(y)(t')(w')]$

Where $\text{Dox}_{x, t, w} = \{ \langle w', t', y \rangle : \text{it is compatible with what } x \text{ believes in } w \text{ at } t \text{ for } x \text{ to be } y \text{ in } w' \text{ at } t' \}$

Further still, Pearson follows Abusch (2004) in assuming that the obligatory future-orientation observed in some attitudinal control constructions – such as those involving the predicate *expect* – is valued relative to the subject’s *subjective now*, rather than to the actual time. That is, the time interval associated with any event embedded beneath *expect* will be located posterior to the time at which the attitude holder locates herself, which may or may

not be the actual time. In order to encode future-orientation at the lexical level, Pearson utilises a system of *extensions* which establish relations of either part-whole structure or precedence between two arguments. We provide Pearson's definition of extensions as follows.

- (531) For any pair of world-time-individual triples $\langle w, t, x \rangle$ and $\langle w', t', y \rangle$, $\langle w', t', y \rangle$ is an *extension* of $\langle w, t, x \rangle$ iff for every α, β , such α is a coordinate of $\langle w, t, x \rangle$ and β is a coordinate of $\langle w', t', y \rangle$ of the same type as α , *either*:
- a. $\alpha \leq \beta$;
 - b. $\alpha \prec_{\text{precedes}} \beta$; *or*
 - c. $\beta \prec_{\text{precedes}} \alpha$

(Pearson 2016:701)

Let us evaluate the definition in (531) first as it applies to pairs of time intervals of type $\langle i \rangle$. Consider the notion that a time interval t may denote a particular set of instances (e.g., if $t = \text{today}$, then t constitutes the set of all hours/minutes/seconds that make up the relevant 24-hour period denoted by *today*). As such, given two distinct time intervals t and t' , we may arguably establish a salient part-whole extension relation between t and t' , such that $t \leq t'$ (as per (531a)). Further still, given that the unfolding of an event/situation in time may be conceptualised as a directed path structure along a temporal axiom (cf. Krifka 1998; Piñango and Deo 2016), precedence becomes a salient method in characterising relations within the set of time intervals implicated in said event/situation (such that $t \prec_{\text{precedes}} t'$, or $t' \prec_{\text{precedes}} t$, as per (531b,c)). As such, time intervals may by hypothesis invoke any of the possible extension relations defined in (531) above.

Pearson contends that the same is not true of individuals: individuals do not constitute the kinds of logical objects that can form relations of precedence. As such, any individual extension y of an individual x must instead establish a salient part-whole relation in order to satisfy the definition of *extension* set out in (531), such that $x + y = y$ (see Pearson 2016:702 for pertinent discussion).⁷⁵ Utilising these definitions of *extensions*,

⁷⁵ We contend that Pearson's characterisation of the possible relations between individuals is too simplistic; individuals may well establish relations of precedence if a given directed path is formed of various individuals arranged in a meaningfully transitive, asymmetrical order. For example, an orderly queue of shoppers at the deli counter of the local supermarket may be considered a directed path, and the individuals which make up

Pearson provides the refined lexical entry for *expect* in (532) below.

(532) *Lexical entry of expect, v.2*

$$\llbracket \text{expect} \rrbracket = \lambda P_{\langle e(i(s,t)) \rangle} . \lambda x_e . \lambda t_i . \lambda w_s . \forall \langle w', t', y \rangle [\langle w', t', y \rangle \in \text{Expect}_{x,w} \rightarrow \exists \langle w'', t'', z \rangle [\langle w'', t'', z \rangle \text{ is an extension of } \langle w', t', y \rangle \wedge P(z)(t'')(w'')]]$$

The use of a lexically specified *extension* in the denotation of *expect* provides an avenue to derive both partial control and future-orientation simultaneously. The relation between the individual y in the attitude holder's *expect*-alternatives and the individual z in the encoded extension is necessarily a part-whole relation (as per our discussion above). As such, Pearson's account correctly predicts the proper subset relation between controller and controllee which characterises partial control. Likewise, *expect* by hypothesis ensures that the extension within its denotation specifies a precedence relation between the time interval t' and its extension t'' such that t' precedes t'' , thereby yielding the obligatory future-orientation.

7.3.2. Pearson's analysis and controlled nominal complements

At first glance, Pearson's (2013, 2016) lexical semantic account of partial control does not lend itself to deriving the desired temporal properties of nominal complements to attitude predicates; her analysis targets only infinitival complement constructions. The aim of this section will be to determine if (any of) Pearson's analysis of infinitive-selecting attitudinal control predicates can be extended to account for the temporal properties of eventive nominal complements.

As per our *temporal orientation in NP* generalisation from chapter 2, future-oriented control predicates enforce posteriority in their nominal complements. Likewise, past-oriented control predicates enforce anteriority in their nominal complements. Despite our analysis of compositional nominalisation in chapter 4, let us assume that event-denoting NPs introduce a nominal reference time argument t_{np} (for further discussion, see section 7.4.3). Under this assumption – and disregarding the candidate individual element introduced in the attitude holder's set of doxastic alternatives – Pearson's lexically specified temporal extensions may provide some purchase on the nature of temporal

its constituent parts may be defined by relations of precedence between each other (see also Piñango and Deo 2016).

orientation in nominal complements. For example, consider the minimal pair in (533). If both the infinitival complement in (533a) as well as the nominal complement in (533b) contain a time interval that may be manipulated by the lexically encoded extension in the denotation of the predicate *promise*, then the identical temporal behaviour in both examples is expected.

(533)a. Today, John promised to inspect the factory (*yesterday).

$= \lambda w.\lambda t. \forall \langle w',t' \rangle [\langle w',t' \rangle \in \text{Promise}_{\text{John},t,w} \rightarrow \exists \langle w'',t'' \rangle [\langle w'',t'' \rangle \text{ is a future-oriented extension of } \langle w',t' \rangle \wedge \text{PRO inspect the factory} = 1 \text{ in } w'' \text{ at } t'']]$

b. Today, John promised the inspection of the factory (*yesterday).

$= \lambda w.\lambda t. \forall \langle w',t' \rangle [\langle w',t' \rangle \in \text{Promise}_{\text{John},t,w} \rightarrow \exists \langle w'',t'' \rangle [\langle w'',t'' \rangle \text{ is a future-oriented extension of } \langle w',t' \rangle \wedge \iota e[\text{inspect-the-factory}(e) = 1 \text{ in } w'' \text{ at } t'']]]$

The proposal that Pearson's temporal extensions may be implicated in the interpretation of nominal complement environments is supported by the observation that the reference time of event-denoting nominal complements is understood relative to the attitude holder's *subjective now*, rather than to the actual time. Consider, for instance, a scenario in which Bill – the manager of a factory – is expecting a team from corporate to come and inspect his premises at 3pm today. However, unbeknownst to Bill, the clocks in his office are off and it is actually 4pm when Bill's expectation in (534) holds.

(534) Bill expects the inspection of the factory at 3 pm.

Given that there is no world in which 3 pm is 4 pm, it must be the case that the reference time associated with the event-denoting nominal complement (to the extent that a nominal reference time argument is present at LF) is interpreted relative to the attitude holder's *subjective now*.

While the derivation of the appropriate temporal orientation by means of lexically specified extensions may be a plausible line of inquiry, the situation becomes significantly murkier when we consider the role of individual extensions within Pearson's framework. Recall that, for Pearson, partial control and temporal orientation are derived in parallel by means of extensions on a set of doxastic alternatives, each of which consists of a world-time-individual triple. As such, wholesale application of Pearson's analysis to nominal complement environments leads to under-generation: we expect the manifestation of PC,

contra the *control into NP* generalisation.⁷⁶

Pre-theoretically, there are seemingly two alternative strategies for deriving temporal orientation in the complements of attitudinal predicates: either (i) there is a single lexical entry for any given predicate of propositional attitude which derives the appropriate temporal properties in all possible complement environments, or (ii) we invoke a systematic lexical ambiguity such that each attitudinal predicate corresponds to a number of lexical entries, each of which will derive/select for the correct temporal properties in the complement. Given the inherent under-generation in Pearson's model when applied to nominal complement environments, option (i) is untenable if partial control and temporal orientation are derived in parallel within the lexical denotation of a given attitudinal control predicate. On the other hand, option (ii) is entirely compatible with Pearson's framework, as long as the lexical entry for *expect* in (532) above constitutes a specifically infinitive-selecting instantiation of the verb – call it *expect_{inf}*. We may then propose a unique lexical entry – call it *expect_{DP}* – which selects for appropriate nominal complements and enforces future-orientation, but lacks any specification for obligatory control.

While the above strategy will yield the desired result, it cannot explain the generality with which a given temporal specification (be it future- or past-orientation) holds of the complements to attitudinal predicates, regardless of syntactic category. For example, consider the pattern in (535) below. The examples in (535a) and (535b) demonstrate again that both infinitival and nominal complements to the predicate *expect* require future-orientation. Furthermore, we see in (535c) and (535d) that the same is true of finite clausal complements as well.

- (535) a. Yesterday, John expected to inspect the factory (tomorrow/*last week).
b. Yesterday, John expected the inspection of the factory (tomorrow/*last week).
c. Yesterday, John expected that Bill would inspect the factory tomorrow.
d. *Yesterday, John expected that Bill inspected the factory last week.

As per option (ii), the data in (535) would require a third lexical entry *expect_{fin}* which selects for a future-oriented finite CP, and which likewise lacks any specification for obligatory control.

Rather than adopting a framework of systematic lexical ambiguity, we may consider revisiting option (i) by removing the derivation of obligatory partial control from the lexical

⁷⁶ We will assume without explicit formal argumentation that event-denoting nominal complements constitute the right kind of input to quantifiers over sets of doxastic alternatives.

semantics of attitudinal control predicates. With the specification of PC removed, there is no need for multiple lexical entries. Rather, we may unify any instantiation of the predicate *expect* under a single lexical entry which either encodes or selects for future-oriented complements, irrespective of their syntactic status. Though we take no stance on this issue in the present work, we note that this latter strategy is in line with the reductionist approach taken throughout this thesis.

We conclude this section by reiterating the consequences of Pearson's proposals for the derivation of temporal orientation in nominal complements to attitude predicates. Irrespective of the viability of a lexically encoded control relation, deriving future- or past-orientation via the lexical semantics of the selecting predicate *prima facie* predicts the persistence of these temporal properties in nominal complement configurations. However, we will find in section 7.4.3 that future-orientation may require a specifically syntactic element in the complement, whether it is infinitival or nominal.

7.4. Deriving temporal orientation in the syntax

This section will examine Wurmbrand's (2014) model of future-oriented controlled infinitives, and her use of the modal future operator *woll*. The reader should note that we make no claims in this section regarding the syntactic structure of future-oriented infinitives. Instead, we aim to determine whether a syntactic component that is arguably responsible for deriving temporal orientation in controlled infinitival complements can be equally motivated in controlled nominal complements.

7.4.1. Motivating a composite future tense

Wurmbrand (2014) proposes that future-oriented controlled infinitives are, in fact, tenseless. That is, these infinitival complements do not contain a contentful Tense head. Instead, following Abusch (1985, 1988), Wurmbrand argues that future-oriented infinitives project a modal future operator *woll*.

This assertion is, in part, motivated by differences between *finite future* and *infinitival future*, as illustrated by the following examples (Wurmbrand 2014:411). First, in (536a), we see that future-oriented infinitives may precede the utterance time when embedded beneath a control predicate. The same is not true for finite *will*-clauses, as illustrated in (536b). Second, example (537a) shows that future-oriented infinitives may occur embedded under a matrix future tense. Conversely, finite *would* (as in (537b)) is only

acceptable in this environment if it is interpreted conditionally, rather than temporally.

- (536) a. Leo decided a week ago to go to the party yesterday.
b. Leo decided a week ago that he will go to the party (*yesterday).

- (537) a. John will promise me tonight to tell his mother tomorrow that ...
b. *John will promise me tonight that he would tell his mother tomorrow that ...
[* unless conditional]

Wurmbrand (2014) assumes future tense to be a complex, composite tense, made up of (i) a true Tense feature, either present tense (PRES) or past tense (PAST), and (ii) an abstract modal operator *woll*, which yields posteriority (Abusch 1985, 1988, see also Thomason 1970; Condoravdi 2002; Copley 2002; Kaufmann 2005). In English, PRES+*woll* is overtly realised as *will*, and PAST+*woll* as *would*. This composite analysis of future tense is motivated by (i) the fact that future tense is *absolute*, and (ii) *sequence of tense* effects.

The *absolute* nature of English PRES is well documented (cf. Enç 1987; Abusch 1988; Ogihara 1996; Schlenker 1999, a.o.); an utterance in the present tense must be evaluated with respect to the utterance time. We may demonstrate this phenomenon through the so-called *double access* reading, as illustrated in the PRES-under-PAST construction in (538a). Here, the embedded PRES must be interpreted as containing both the matrix PAST (the time of finding-out), as well as the utterance time. Crucially, an interpretation in which the embedded PRES occurs before the utterance time is impossible. The situation is identical with an embedded finite clause containing *will*, as in (538b): an interpretation in which the embedded time is after the matrix time but before the utterance time is equally impossible.

- (538) a. Leo found out that Mary is pregnant. absolute
b. Leo found out that Mary will be pregnant. absolute
(Wurmbrand 2014:412)

The shared *absolute* interpretation of English PRES and English FUTURE follows from an analysis in which the latter is not atomic, but instead decomposes into PRES + a future operator.

The *sequence-of-tense* (SOT) phenomenon offers a second argument for a compositional account of English future tense (Dowty 1982; Enç 1987, 2004; Abusch 1988,

1997, 2004; Ogihara 1996; Wurmbrand 2014). SOT refers to an instance in which a morphologically overt tense is rendered semantically vacuous. By way of illustration, consider the embedded clause in example (539a), which shows past tense morphology on the embedded verb *be*: here, embedded PAST may optionally be interpreted as occurring simultaneously with the matrix PAST. That is, the pregnancy-time may be interpreted as overlapping with the finding-out time, rather than preceding it. This interpretation is illustrated in (539b), where SOT is expressed as deletion of the embedded tense feature (see Ogihara 1995a, 1995b, 1996, 2007). The interpretative variation between SOT and non-SOT readings is demonstrated with the paraphrases in (539c,d), respectively.

- (539) a. Leo found out that Mary was pregnant.
 b. [Leo PAST find out [that Mary ~~PAST~~ is pregnant]]
 c. ‘Leo found out “Mary is currently pregnant”.’ SOT
 d. ‘Leo found out that Mary had been pregnant in the past.’ non-SOT

According to Ogihara, a tense feature may be deleted at LF, so long as it is within the scope of a tense feature with an identical value. Just in case deletion does occur, the embedded clause is interpreted as NOW relative to the tense feature of the matrix clause, resulting in simultaneity. We abstract away from the particular deletion operation, though we note that embedded PAST will only delete within the scope of matrix PAST (as opposed to matrix PRES).

Turning now to English future tense, Wurmbrand (2014) notes that matrix future tense triggers SOT effects in embedded PRES. For example, the utterance in (540a) permits two temporal interpretations: (i) the embedded clause may be interpreted as true PRES, in which case *is walking* is absolute and valued with respect to the utterance time (as in (540b)), or (ii) the embedded clause may be interpreted as a relative NOW, in which case *is walking* is interpreted as simultaneous with the event denoted by the matrix clause (see (540c)). The possibility of the latter interpretation is straightforwardly explained if English future is composed of a future modal *will* and PRES, which may subsequently activate SOT deletion of an embedded PRES feature.

- (540) a. John will see the unicorn that is walking.
(Ogihara 1996:82)
 b. PRES *will* see [NP PRES walk] non-SOT
 c. PRES *will* see [NP ~~PRES~~ walk] SOT

Having motivated a compositional analysis of English finite future tense, we may now turn to future tense in infinitival complements. Recall that in (536b) we saw that English finite future is *absolute*; the embedded clause may not precede the utterance time. In contrast, the embedded future-oriented infinitive in (536a) is interpreted as relative to the matrix time. Wurmbrand (2014) proposes that this difference is due to the fact that, while future finite clauses contain a Tense projection and an associated tense feature (see (541a)), future-oriented infinitival clauses do not (541b). Note that we follow Wurmbrand in assuming that T[PRES]+*woll* in (541a) will be spelled-out as *will* at PF.

- (541) a. [TP T[PRES] [_{wollP} *woll* [_{VP} go to the party]]] *finite future*
 b. [_{wollP} *woll* [_{VP} PRO to go to the party]] *infinitival future*

The analysis in (541) has the desired effect: future-oriented finite clauses project a Tense node valued for PRES, resulting in the *absolute* interpretation we observe in (536b). On the other hand, future-oriented infinitival complements project only up to *wollP*, resulting in a reading in which the embedded time is always interpreted relative to the matrix time (see (536a)).

There are a number of alternative proposals which attempt to preserve the presence of a Tense projection in non-finite environments. For example, one might argue that infinitival clauses *do* contain T[PRES], but that infinitival PRES is defined as *relative* – much like PRES in Japanese and Hebrew – rather than *absolute*. Further still, one may pursue the strategy employed by Martin (1996, 2001) such that infinitival future corresponds to *would* rather than *will*. While further investigation of these potential alternatives would take us too far afield, we point the reader to Wurmbrand (2014:414-419) for pertinent discussion and critique.

7.4.2. Evidence for a syntactic future element in infinitival complements

The existence of a syntactic future element *woll* stands in direct opposition to the hypothesis that the temporal orientation of controlled infinitives is determined directly by the lexical semantics of the selecting predicate (see e.g., Ogihara 1996; Abusch 1997; Katz 2001, 2004; Enç 2004). In this latter case, neither a Tense projection nor a modal future operator *woll* would be necessary. Wurmbrand (2014) offers two arguments against this view: (i) a syntactic future element is indirectly evidenced by the distribution of restructuring effects

in German, and (ii) a syntactic future operator is motivated by Abusch's (2004) scope argument. Given that the present work is primarily concerned with nominal complements to control predicates, and that restructuring effects are distinctly clausal in nature, we put the former argument aside. The remainder of this section will outline Wurmbrand's extension of Abusch's scope argument.

Consider the examples in (542). The context in which *Paul* mistakes the identity of Guido's *co-worker* ensures a *de dicto* reading for the NP *a sister* in (542a); the NP must fall within the scope of the matrix predicate. Since the NP *a sister* is the presuppositional antecedent of the definite description *the woman who might have a crush on him*, the latter must also receive a *de dicto* interpretation in (542b). Finally, given the continuation in (542c), it is Paul's belief that the time of the crush precedes the time of the intended conversation.

(542) CONTEXT: Some time ago, Paul misidentified a co-worker of Guido's as Guido's sister.

- a. Paul₁ believed that Guido had a sister₂, and that she₂ had a crush on him₁.
- b. He believed that he would eventually have a long frank conversation with the woman who might have a crush on him.
- c. But he believed that at that point she would not have a crush on him anymore.

(Abusch 2004: ex. 76)

Abusch (2004) assumes that *might* introduces a temporal argument that needs to be bound, and concludes that, in (542b), this argument is bound by the same operator which binds the attitude holder's *contemporary now* – the highest world/time variable within the embedded clause. Crucially, the temporal argument of *might* is not bound by the more local embedded future operator associated with *would*, which by hypothesis binds the world/time argument associated with the embedded VP *have a long frank conversation with NP*. As such, the time of *might* is interpreted as simultaneous with the attitude holder's *now* rather than as relative the time of the conversation.

Further still, Abusch observes that the same phenomenon may be observed in constructions involving future-oriented infinitival complements, as illustrated in example (543). Here, despite the lack of any overt embedded future operator, the time of *might* may again be interpreted relative to the attitude holder's *contemporary now*, both of which may be independent from the time associated with the VP *have dinner with NP*. These observations suggest that, as was the case in (542b), the embedded non-finite clauses in

(543a) and (543b) contain a future operator which binds the world/time variable associated with the embedded VP independently from the world/time variable associated with the attitude holder's contemporary now.

- (543) a. Paul decided to eventually have dinner with the woman who might have a crush on him.
b. Paul promised to eventually have dinner with the woman who might have a crush on him.

Wurmbrand (2014) provides further support for Abusch's scope argument, employing the composite temporal element *would* rather than the modal auxiliary *might*. The context in example (544) again ensures a *de dicto* reading of the definite descriptions. Critically, as was the case in (543), the time of the relativised *would* clause may be interpreted as relative to the attitude holder's contemporary now, and the time of the embedded infinitival VP *to have dinner with NP* may be interpreted independently from both.

- (544) CONTEXT: Remy met a man who she mistakes for her friend's doctor about whom everyone says that he is very reliable and trustworthy and that he always keeps his promises. They go out and he promises to call her back later tonight. Remy is very excited and starts making plans for their next date already. What Remy doesn't know is that this man is exactly the opposite of her friend's doctor – he is unreliable and never calls people back.
- a. Remy believes that she went out with her friend's doctor and that he will call her back tonight.
b. Remy decided to have dinner with the man who would call her back tonight.
c. Remy planned to have dinner with the man who would call her back tonight.

(Wurmbrand 2014:421)

Wurmbrand demonstrates that the interpretations in (543) and (544b,c) are best explained if we assume the presence of a syntactic future operator (*woll*) introduced within the infinitival complement. For example, consider the hypothetical denotation of (544b) in (545a) below. Note here that, for simplicity, we abstract away from the distinction between world variables and time intervals, and furthermore assume that world/time variables may be bound non-locally. We observe in (545a) that the highest world/time binder λw_I binds the temporal argument introduced by *woll*, as well as the temporal argument associated

with *would* in the lower relative clause. However, because *woll* also introduces a binder λ_{w_2} it may bind the temporal argument associated with the embedded VP independently, yielding the desired interpretation.

- (545) a. decide λ_{w_1} woll (w_1, λ_{w_2} [have-dinner-with (w_2 , the-woman-might/would-VP (w_1))])
 b. *decide+future λ_{w_1} [have-dinner-with (w_1 the-woman-might-would-VP ($w_1/\#2$))]
 (Wurmbrand 2014:422)

On the other hand, the denotation in (545b), which assumes that the temporal orientation of embedded future infinitives is determined directly by the selecting predicate, makes the wrong prediction regarding the possible interpretation in (543) and (544) above. Specifically, with only the single world/time variable binder λ_{w_1} associated with the matrix predicate, example (545b) predicts that all world/time variables will be bound by the same binder. Crucially, this hypothesis fails to predict the independent temporal shifting of the world/time associated with the embedded VP, which the *woll* hypothesis neatly captures.⁷⁷

In sum, Wurmbrand (2014), following Abusch's (2004) scope argument, provides some motivation for the presence of a syntactic future operator within future-oriented infinitival complements to attitudinal control predicates.

7.4.3. Nominal complements and a syntactically realised future operator

We have thus far demonstrated the motivation for a composite view of English future tense, as well as given Wurmbrand's empirical basis for the claim that the future operator *woll* is syntactically present in future-oriented infinitives. This final section will determine whether or not this analysis of infinitival complements can account for the temporal properties witnessed in nominal complements to PC predicates. Recall our *temporal orientation in NP* generalisation, repeated in (546) below.

(546) *Temporal orientation in NP*

The temporal properties of NP complements mirror those of the corresponding clausal complement, and temporal orientation (where applicable) is identical across these complements.

⁷⁷ The hypothesis in (545b) is indeed problematic, in that it fails to predict even the non-shifted interpretation of (544b), in which the time of the relative clause occurs after the time of the embedded VP.

Crucially, this generalisation is independent of the manifestation of any control relation within the nominal. As such, any theoretical account of (546) must be equally independent of any one particular theory of control into NP (see section 7.3.2 for related discussion). Likewise, we note that the generalisation in (546) is independent of the argument projecting properties of the nominal complement in question.

Turning first to compositionally derived event nominalisations, we note that we reviewed significant evidence in chapter 4 suggesting that even argument-bearing de-verbal nominals do not contain projections of Tense and Aspect. As such, the hypothesis that nominalisations such as *examination* or *investigation* contain the same salient syntactic future operator that is implicated in future-oriented infinitives is unmotivated. We therefore predict that, unlike the particular temporal shifting observed in examples (543) and (544), future-oriented nominalisations will *not* exhibit independent temporal shift. That is, given a nominal complement containing a relative *would/might* clause, as well as an appropriate context ensuring a *de dicto* reading of any nominal *of*-argument, the time associated with the nominal event should always precede the time associated with the relative clause.

This prediction does not hold. Consider the examples in (547), which include a context that ensures the necessary *de dicto* of the argument NP and its anaphora. In example (547b) which contains an embedded non-finite complement, we find the expected interpretative possibility, such that the world/time associated with the investigating VP may come after the world/time associated with the meeting VP contained in the relative clause. Recall that Wurmbrand accounts for this possibility by appealing to a syntactic operator *woll* within the non-finite clause which may independently bind the temporal argument of the embedded VP. Crucially, despite the predictions laid out above, the same interpretative possibility is available in the nominal complement construction in (547c). That is, the time associated with the investigation NP may be interpreted as occurring after the time of the meeting.

- (547) CONTEXT: James Bond of MI6 met a man at a bar who he believed was the international criminal Goldfinger. After some discussion, they agreed to meet later that night on the roof of Bond's hotel. Once back in his room, Bond begins making plans for a full criminal investigation into the man who he believes to be Goldfinger. What Bond doesn't know is that the man that he met at the bar is actually Goldfinger's second cousin, an upstanding citizen with no ties to the criminal underworld.

- a. Bond₁ believes that he met an international criminal₂, and that he₂ would meet him₁ later tonight.
- b. Bond promised to investigate the man who would meet him later tonight.
- c. Bond promised an investigation of the man who would meet him later tonight.

This result is wildly unexpected if the phenomenon of temporal shifting is associated with a distinctly clausal *woll* projection, and as such calls into question our analysis of derivational nominalisation as discussed in chapter 4. In particular, it seems to implicate an extended verbal architecture underlying the process of de-verbal nominalisation, such that nominals of the sort in (547c) contain not just a VP, but minimally a VoiceP, an AspP and critically a *woll*P, as in (548).

(548) [_{nP} n^o (= -(a)tion) [_{wollP} *woll* ... [_{AspP} Asp [_{VoiceP} Voice [_{VP} investigate the man]]]]]]

However, before we abandon the less verbal analysis of derivational nominalisation put forward in chapter 4, it would be prudent to evaluate the interpretative temporal possibilities in constructions involving clearly non-derived noun phrases. That is, given an event-describing noun phrase such as *a coffee with the man*, we note that *coffee* has no salient verbal base from which an event nominal may be derived (e.g., **John must coffee with the man*). As such, we cannot motivate an extended VP analysis for *a coffee with the man*, of the type in (548). Thus, if the interpretative temporal possibilities of (547c) are truly linked to a *woll*P projection within the extended verbal derivation of the nominal, we predict that a similar construction involving *a coffee* will not exhibit the same temporal shifting (as it necessarily lacks *woll*).

Again, we find that this prediction does not hold. Consider the examples in (549), in which we borrow the context from Wurmbrand's (2014) example in (544). Critically, the examples in (549b) and (549c) permit an interpretation such that the world/time associated with the *coffee* event comes after the world/time associated with the *would call* VP.

(549) CONTEXT: Remy met a man who she mistakes for her friend's doctor about whom everyone says that he is very reliable and trustworthy and that he always keeps his promises. They go out and he promises to call her back later tonight. Remy is very excited and starts making plans a coffee date. What Remy doesn't

know is that this man is exactly the opposite of her friend's doctor – he is unreliable and never calls people back.

- a. Remy believes that she went out with her friend's doctor and that he will call her back tonight.
- b. Remy demanded a quick coffee with the man who would call her back tonight.
- c. Remy expected a quick coffee with the man who would call her back tonight.

Thus, despite its distinctly non-derivational composition, the event-describing NP *a quick coffee* behaves as though it contains a syntactic future operator.

The picture that emerges from the above data is one in which both compositionally derived nominal complements as well as non-derived NPs give rise to the kind of temporal shifting that is at stake in Abusch's (2004) diagnostic. Given the *temporal orientation in NP* generalisation in (546), we must assume that the temporal properties of both compositional and non-compositional nominal complements are derived via the same mechanism. Furthermore, we must assume that whatever mechanism is responsible for the interpretative possibilities in (547) and (549) above cannot be a *bona fide* projection of clausal *woll*, given the distinctly non-derivational nature of the NP in (549). We are thus presented with two logical possibilities in accounting for the above phenomena: either (i) Abusch's scope diagnostic is not sensitive to the presence of a syntactically salient future operator, but to something else entirely, or (ii) DPs (minimally those with an eventive interpretation) contain a syntactic temporal operator that is similar to but distinct from the clausal *woll* head. Given that a proper evaluation of option (i) is beyond the scope of the present work, we will focus our discussion on option (ii) below.

In a series of works, Lecarme (1996, 1999, 2004, 2008) defends a view of nominal temporal reference such that the nominal system contains a tense projection T beneath the determiner. Further still, Lecarme argues that the canonical relation between CP and TP which is generally argued to determine clausal finiteness is mirrored entirely in a relation of 'nominal finiteness' between DP and its embedded TP (Lecarme 2008). Her argument is motivated primarily by the morphological/inflectional reflexes of independent temporal reference observed in Somali noun phrases. Though we will not attempt to provide an empirical overview of Lecarme's account here, we note that a proposal in which the nominal/determiner system makes available an independent temporal projection may provide some purchase on the examples in (547) and (549). That is, if nominal T introduces a world/time argument, and similarly acts as a binder of the world/time associated with the nominal, we correctly predict the temporal shifting in the above examples irrespective of

derivational complexity within the noun, as made explicit in (550) below.

- (550) a. promise λw_1 [_{DP-T} (w_1 , λw_2 [_{nP} investigation-of (w_2 , the-man-would-VP (w_1))])]]
b. expect λw_1 [_{DP-T} (w_1 , λw_2 [_{nP} coffee-with (w_2 the-man-would-VP (w_1))])]]

While promising, this account introduces considerable semantic complexity in the composition of noun phrases. That is, if the nominal system contains a *bona fide* projection of Tense between the definite determiner and the head noun, it becomes unclear what a type-theoretic derivation of a typical common noun phrase would look like.

The nominal Tense hypothesis is refuted by Tonhauser (2002, 2007, 2008; but cf. Nordlinger and Sadler 2008), who argues that there is little empirical basis for asserting that nominal temporal markers are instances of actual Tense. Rather, Tonhauser pursues a formal semantic analysis of noun phrases such that every nominal predicate contains an implicit nominal time argument (t_{np}) at which the property denoted by the nominal predicate holds. For instance, we may say that a noun like *house* denotes a property of individuals x at time t_{np} , such that $house(x) = 1$ at t_{np} . Although Tonhauser's particular analysis relies on contextual determination of the nominal reference time within a dynamic semantic framework, it may be possible to attribute the binding of t_{np} to some non-clausal syntactic element within the determiner system. This line of argumentation may provide some purchase on the behaviour of nominal complements within the scope of Abusch's (2004) scope diagnostic, as well as on the temporal orientation of nominal complements to attitudinal control predicates. We leave formal and empirical discussion of these notions to future research.

REFERENCES

- Abney, Steven Paul. 1987. 'The English Noun Phrase in Its Sentential Aspect'. Ph. D. Dissertation, MIT.
- Abusch, Dorit. 1985. 'On Verbs and Time'. Ph. D. Dissertation, University of Massachusetts, Amherst.
- . 1988. 'Sequence of Tense, Intensionality, and Scope'. In *Proceedings of the 7th West Coast Conference on Formal Linguistics*, edited by Hagit Borer, 1–14. Stanford, CA.: CSLI Publications.
- . 1997. 'Sequence of Tense and Temporal de Re'. *Linguistics and Philosophy* 20: 1–50.
- . 2004. 'On the Temporal Composition of Infinitives'. In *The Syntax of Time*, edited by Jacqueline Guéron and Jacqueline Lecarme, 27–53. Cambridge, MA.: MIT Press.
- Ackema, Peter, and Ad Neeleman. 2004. *Beyond Morphology: Interface Conditions on Word Formation*. Oxford: Oxford University Press.
- Ackema, Peter, and Maaïke Schoorlemmer. 1994. 'The Middle Construction and the Syntax-Semantics Interface'. *Lingua*, e, 93 (1): 59–90.
- Adger, David. 2003. *Core Syntax: A Minimalist Approach*. OUP Oxford.
- . 2012. *A Syntax of Substance*. Vol. 64. MIT Press.
- Aissen, Judith, and David Perlmutter. 1983. 'Clause Reduction in Spanish'. In *Studies in Relational Grammar 1*, edited by David Perlmutter, 360–403. Chicago: Chicago University Press.
- Alba-Salas, Josep. 2006. 'Subject Control into Nominals in Romance'. *SKY Journal of Linguistics* 19: 9–62.
- Alexiadou, Artemis. 1999. 'On the Syntax of Nominalization and Possession: Remarks on Patterns of Ergativity'. Habilitationsschrift, University of Potsdam.
- . 2001. *Functional Structure in Nominals: Nominalization and Ergativity*. Vol. 42. Amsterdam: John Benjamins.
- . 2009. 'On the Role of Syntactic Locality in Morphological Processes: The Case of (Greek) Derived Nominals'. In *Quantification, Definiteness and Nominalization*, edited by Anastasia Giannakidou and Monika Rathert, 253–80. Oxford: Oxford University Press.
- Alexiadou, Artemis, Elena Anagnostopoulou, and Florian Schäfer. 2006. 'The Properties of Anticausatives Cross-Linguistically'. In *Phases of Interpretation*, edited by M. Frascarelli, 187–212. Berlin: Mouton de Gruyter.
- Alexiadou, Artemis, and Jane Grimshaw. 2008. 'Verbs, Nouns and Affixation'. In *SinSpeC (1): Working Papers of the SFB 732*, edited by Florian Schäfer, 1–16. Stuttgart: University of Stuttgart.
- Alexiadou, Artemis, Liliane Haegeman, and Melita Stavrou. 2008. *Noun Phrase in the Generative Perspective*. Vol. 71. Walter de Gruyter.
- Anand, Pranav. 2006. 'De de Se'. Ph. D. Dissertation, MIT.
- Anderson, Mona. 1983. 'Prenominal Genitive NPs'. *The Linguistic Review* 3 (1): 1–24.
- Bach, Emmon. 1979. 'Control in Montague Grammar'. *Linguistic Inquiry* 10 (4): 515–31.
- Baker, Mark C. 1997. 'Thematic Roles and Syntactic Structure'. In *Elements of Grammar*, edited by Liliane Haegeman, 73–137. Kluwer International Handbooks of Linguistics. Springer Netherlands.
- Barrie, Michael. 2004. 'Moving Towards Partial Control'. In *Proceedings of the North East Linguistic Society 34*, edited by Keir Moulton and Matthew Wolf, 1:133–146. University of Massachusetts at Amherst: Graduate Linguistic Student Association.
- Beard, Robert. 1995. *Lexeme-Morpheme Base Morphology; a General Theory of Inflection and Word Formation*. Albany, NY: SUNY Press.

- Beavers, John, and Andrew Koontz-Garboden. 2012. 'Manner and Result in the Roots of Verbal Meaning'. *Linguistic Inquiry* 43 (3): 331–369.
- . 2015. 'Scalar Change and Manner/Result Complementarity in Manner of Motion Verbs'. Ms. The University of Texas at Austin & The University of Manchester.
- Bianchi, Valentina. 2000. 'The Raising Analysis of Relative Clauses: A Reply to Borsley.' *Linguistic Inquiry* 31: 123–40.
- Bittner, Maria. 1999. 'Concealed Causatives'. *Natural Language Semantics* 7 (1): 1–78.
- Boeckx, Cedric, and Norbert Hornstein. 2003. 'Reply to "Control Is Not Movement"'. *Linguistic Inquiry* 34: 269–80.
- . 2004. 'Movement under Control'. *Linguistic Inquiry* 35 (3): 431–452.
- . 2006a. 'Control in Icelandic and Theories of Control'. *Linguistic Inquiry* 37 (4): 591–606.
- . 2006b. 'The Virtues of Control as Movement'. *Syntax* 9 (2): 118–130.
- Borer, Hagit. 1993. 'Parallel Morphology'. Ms. University of Massachusetts, Amherst.
- . 1994. 'On the Projection of Arguments'. *University of Massachusetts Occasional Papers 17: Functional Projections*, 19–47.
- . 2003. 'Exo-Skeletal vs. Endo-Skeletal Explanations: Syntactic Projections and the Lexicon'. In *The Nature of Explanation in Linguistic Theory*, edited by John Moore and Maria Polinsky. CSLI.
- . 2005a. *In Name Only: Structuring Sense, Volume 2*. Oxford University Press.
- . 2005b. *The Normal Course of Events: Structuring Sense, Volume 2*. Oxford University Press.
- . 2012. 'In the Event of a Nominal'. In *The Theta System: Argument Structure at the Interface*, edited by Martin Everaert, Marijana Marelj, and Tal Siloni, 103–49. Oxford: Oxford University Press.
- . 2014. 'Derived Nominals and the Domain of Content'. *Lingua* 141: 71–96.
- Bošković, Željko. 1997. *The Syntax of Nonfinite Complementation: An Economy Approach*. Cambridge, MA: MIT Press.
- Bowers, John. 2008. 'On Reducing Control to Movement'. *Syntax* 11 (2): 125–143.
- Bresnan, Joan W. 1978. 'A Realistic Transformational Grammar'. In *Linguistic Theory and Psychological Reality*, edited by Moris Halle, G. A. Miller, and Joan W. Bresnan. Cambridge, MA: MIT Press.
- Brody, Michael. 1984. 'On Contextual Definitions and the Role of Chains'. *Linguistic Inquiry* 15: 355–81.
- Bruening, Benjamin. 2013. 'By Phrases in Passives and Nominals'. *Syntax* 16 (1): 1–41.
- . 2015. 'Light Verbs Are Just Regular Verbs'. *U. Penn Working Papers in Linguistics* 21 (1).
- Burzio, Luigi. 1981. 'Intransitive Verbs and Italian Auxiliaries'. Ph. D. Dissertation, MIT.
- . 1986. *Italian Syntax*. Dordrecht: Reidel.
- Butt, Miriam. 2010. 'The Light Verb Jungle: Still Hacking Away'. In *Complex Predicates: Cross-Linguistic Perspectives on Event Structure*, edited by Mengistu Amberber, Mark Harvey, and Brett Baker, 48–78. Cambridge: Cambridge University Press.
- Carnie, Andrew. 2006. *Syntax: A Generative Introduction*. Oxford, UK: Blackwell Publishing.
- Caudal, Patrick. 2005. 'Stage Structure and Stage Salience for Event Semantics'. In *Aspectual Inquiries*, edited by Paula Kempchinsky and Roumyana Slabakova, 239–64. Dordrecht: Springer.
- Champpollion, Lucas. 2010. 'Parts of a Whole: Distributivity as a Bridge Between Aspect and Measurement'. Ph. D. Dissertation, University of Pennsylvania.
- Champpollion, Lucas, and Manfred Krifka. 2016. 'Mereology'. In *Cambridge Handbook of Semantics*. Cambridge University Press.
- Chierchia, Gennaro. 1984. 'Topics in the Syntax and Semantics of Infinitives and Gerunds'. Doctoral dissertation, University of Massachusetts.

- . 1989a. ‘Anaphora and Attitudes De Se’. In *Semantics and Contextual Expression*, edited by J. Bartsch, J. van Benthem, and P. van Emde Boas, 1–31. Dordrecht: Foris.
- . 1989b. ‘Structured Meanings, Thematic Roles and Control’. In *Properties, Types and Meaning II*, edited by Gennaro Chierchia and Barbara Partee, 131–66. Dordrecht: Kluwer.
- . 2004. ‘A Semantics for Unaccusatives and Its Syntactic Consequences’. In *The Unaccusativity Puzzle*, edited by A. Alexiadou, E. Anagnostopoulou, and M. Everaert, 22–59. Oxford: OUP.
- Chierchia, Gennaro, and Sally McConnell-Ginet. 2000. *Meaning and Grammar: An Introduction to Semantics, 2nd Edition*. Cambridge: MIT Press.
- Chomsky, Noam. 1964. *Current Issues in Linguistic Theory*. The Hague: Mouton.
- . 1965. *Aspects of the Theory of Syntax*. Cambridge, MA: MIT Press.
- . 1970. ‘Remarks on Nominalization’. In *Readings in English Transformational Grammar*, edited by Roderick A. Jacobs and Peter S. Rosenbaum, 184–221. Waltham, MA: Ginn and Co.
- . 1981. *Lectures on Government and Binding*. Dordrecht: Foris.
- . 1982. *Some Concepts and Consequences of the Theory of Government and Binding*. Cambridge, MA: MIT Press.
- . 1986. *Barriers*. Linguistic Inquiry Monograph 13. Cambridge, MA: MIT Press.
- . 1993. ‘A Minimalist Program for Linguistic Theory’. In *The View from Building 20*, edited by Kenneth Hale and Samuel J. Keyser, 1–52. Cambridge, MA: MIT Press.
- . 1995. *The Minimalist Program*. Edited by Gert Webelhuth. Vol. 34. Current Studies in Linguistics 1. MIT Press. http://www.journals.cambridge.org/abstract_S0022226797006889.
- . 2000. ‘Minimalist Inquiries: The Framework’. In *Step by Step: Essays on Minimalism in Honor of Howard Lasnik*, edited by Roger Martin, David Michaels, and Juan Uriagereka, 89–155. Cambridge, MA: MIT Press.
- . 2001. ‘Derivation by Phase’. In *Ken Hale: A Life in Language*, edited by Michael Kenstowicz, 1–52. Cambridge, MA: MIT Press.
- Chomsky, Noam, and Howard Lasnik. 1993. ‘The Theory of Principles and Parameters’. In *Syntax: An International Handbook of Contemporary Research*, edited by Joachim Jacobs, Arnim von Stechow, Wolfgang Sternefeld, and Theo Vennemann, 1:506–69. Berlin: Walter de Gruyter.
- Chung, Sandra, and William A. Ladusaw. 2004. *Restriction and Saturation*. MIT Press.
- Cinque, Guglielmo. 2003. ‘The Interaction of Passive, Causative and ‘Restructuring’ in Romance’. In *The Syntax of Italian Dialects*, edited by Christina Tortora, 50–66. Oxford University Press.
- . 2006. *Restructuring and Functional Heads*. Oxford: Oxford University Press.
- Clark, Herbert H. 1996. *Using Language*. Cambridge: Cambridge University Press.
- Clark, Robin. 1990. *Thematic Theory in Syntax and Interpretation*. Routledge Publishers.
- Condoravdi, Cleo. 2002. ‘Temporal Interpretation of Modals: Modals for the Present and for the Past’. In *The Construction of Meaning*, edited by David Beaver, Brady Clark, and Casillas. Stanford, CA: CSLI Publications.
- . 2009. ‘Measurement and Intensionality in the Semantics of the Progressive’. Ms. Stanford University.
- Copley, Bridget. 2002. ‘The Semantics of the Future’. Ph. D. Dissertation, MIT.
- Cruse, D. A. 1972. ‘A Note on English Causatives’. *Linguistic Inquiry* 3 (4): 520–528.
- Culicover, Peter, and Ray Jackendoff. 2001. ‘Control Is Not Movement’. *Linguistic Inquiry* 32 (3): 493–512.
- . 2005. *Simpler Syntax*. Oxford University Press.
- . 2006. ‘Turn Over Control to the Semantics!’ *Syntax* 9 (2): 131–152.

- Davidson, Donald. 1967. 'The Logical Form of Action Sentences'. In *The Logic of Decision and Action*, edited by Nicholas Rescher, 81–95. Pittsburgh: Pittsburgh University Press.
- Deal, Amy Rose. 2013a. 'External Possession and Possessor Raising'. In *The Blackwell Companion to Syntax II*. Blackwell Publishing.
- . 2013b. 'Possessor Raising'. *Linguistic Inquiry* 44 (3): 391–432. https://doi.org/10.1162/LING_a_00133.
- Déchaine, Rose-Marie. 1994. 'Ellipsis and the Position of Subjects'. In , 24:47–63.
- Di Sciullo, Anna Maria, and Edwin Williams. 1987. *On the Definition of Word*. Cambridge, MA: MIT Press.
- Dikken, Marcel den. 2006. *Relators and Linkers*. MIT Press.
- Don, Jan. 1993. 'Morphological Conversion'. Ph. D. Dissertation, Utrecht University.
- . 2004. 'Categories in the Lexicon'. *Linguistics* 42: 931–56.
- Dowty, David. 1979. *Word Meaning and Montague Grammar*. Dordrecht: Reidel.
- . 1982. 'Tense, Time Adverbs, and Compositional Semantic Theory'. *Linguistics and Philosophy* 9: 405–26.
- . 1985. 'On Recent Analyses of the Semantics of Control'. *Linguistics and Philosophy* 8 (3): 291–331.
- . 1989. 'On the Semantic Content of the Notion of "Thematic Role"'. In *Properties, Types and Meaning*, edited by Gennaro Chierchia, Barbara H. Partee, and Raymond Turner, II:69–129. Dordrecht: Kluwer.
- . 1991. 'Thematic Proto-Roles and Argument Selection'. *Language* 67 (3): 547–619. <https://doi.org/10.2307/415037>.
- Elliott, Patrick. 2016. 'Explaining DPs vs. CPs Without Syntax'. In *Proceedings of CLS*, 52:171–85.
- Enç, Mürvet. 1981. 'Tense without Scope: An Analysis of Nouns as Indexicals'. Ph. D. Dissertation, University of Wisconsin at Madison.
- . 1986. 'Towards a Referential Analysis of Temporal Expressions'. *Linguistics and Philosophy* 9: 405–26.
- . 1987. 'Anchoring Conditions for Tense'. *Linguistic Inquiry* 18: 633–57.
- . 2004. 'Rethinking Past Tense'. In *The Syntax of Time*, edited by Jacqueline Guéron and Jacqueline Lecarme, 203–15. Cambridge, MA.: MIT Press.
- Farkas, Donka F. 1988. 'On Obligatory Control'. *Linguistics and Philosophy* 11: 27–58.
- Fintel, Kai von, and Irene Heim. 2011. 'Intensional Semantics'. Ms. MIT. <http://web.mit.edu/fintel/fintel-heim-intensional.pdf>.
- Fodor, Jerry. 1970. 'Three Reasons for Not Deriving "Kill" from "Cause to Die"'. *Linguistic Inquiry* 1 (4): 429–438.
- Fu, Jingqi. 1994. 'On Deriving Chinese Derived Nominals: Evidence for Parallel Morphology'. Ph. D. Dissertation, University of Massachusetts, Amherst.
- Fu, Jingqi, Tom Roeper, and Hagit Borer. 2001. 'The VP within Process Nominals: Evidence from Adverbs and the VP Anaphor *Do So*'. *Natural Language and Linguistic Theory* 19 (3): 549–582.
- Fukuda, Shinichiro. 2006. 'The Syntax of Japanese Aspectual Verbs'. In *3rd Workshop on Altaic in Formal Linguistics*.
- . 2007. 'On the Control/Raising Ambiguity with Aspectual Verbs: A Structural Account'. In *Studies in Complement Control*, edited by Barbara Stiebels, 159–95. ZAS Papers in Linguistics 47. Berlin: ZAS.
- Ginet, Carl. 1990. *On Action*. Cambridge: Cambridge University Press.
- Giorgi, Alessandra, and Giuseppe Longobardi. 1991. *The Syntax of Noun Phrases*. Cambridge: Cambridge University Press.
- Grano, Thomas. 2011. 'Mental Action and Event Structure in the Semantics of Try'. In *Proceedings of Semantics and Linguistic Theory*, 21:426–43. New Brunswick, NJ.

- . 2012. ‘Control and Restructuring at the Syntax-Semantics Interface’. Ph. D. Dissertation, University of Chicago.
- . 2015. *Control and Restructuring*. Oxford Studies in Theoretical Linguistics 56. Oxford: Oxford University Press.
- . 2016. ‘Semantic Consequences of Syntactic Subject Licensing: Aspectual Predicates and Concealed Modality’. In *Proceedings of Sinn Und Bedeutung*, 20:306–22.
- . 2017a. ‘Control, Temporal Orientation, and the Cross-Linguistic Grammar of Trying’. *Glossa* 2 (1): 1–21.
- . 2017b. ‘The Logic of Intention Reports’. *Journal of Semantics* 34 (4): 587–632.
- Grewendorf, Gunther. 1984. ‘Reflexivierungsregeln Im Deutschen’. *Deutsche Sprache* 1: 14–30.
- . 1988. *Aspekte Der Deutschen Syntax*. Tübingen: Narr.
- Grimm, Scott, and Louise McNally. 2013. ‘No Ordered Arguments Needed for Nouns’. In *Proceedings of the 19th Amsterdam Colloquium*, 123–30. ILLC.
- . 2015. ‘The -Ing Dynasty: Rebuilding the Semantics of Nominalizations’. In *Proceedings of SALT 25*, 82–102.
- Grimshaw, Jane. 1990. *Argument Structure*. Cambridge, MA.: MIT Press.
- Grimshaw, Jane, and Armin Mester. 1988. ‘Light Verbs and β -Marking’. *Linguistic Inquiry* 19 (2): 205–232.
- Grosu, Alexander, and Fred Landman. 1998. ‘Strange Relatives of the Third Kind’. *Natural Language Semantics* 6 (2): 125–170.
- Hacquard, Valentine. 2010. ‘On the Event Relativity of Modal Auxiliaries’. *Natural Language Semantics* 18 (1): 79–114.
- Haegeman, Liliane. 1994. *Introduction to Government and Binding Theory*. 2nd ed. Blackwell Textbooks in Linguistics. Oxford and Cambridge: Blackwell.
- Hale, Kenneth, and Samuel Jay Keyser. 1986. ‘Some Transitivity Alternations in English’. *Lexicon Project Working Papers* 10.
- Halle, Morris, and Alec Marantz. 1993. ‘Distributed Morphology and the Pieces of Inflection’. In *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, edited by Kenneth Hale and Samuel Jay Keyser, 111–76. Cambridge, MA.: MIT Press.
- Harley, Heidi. 2009. ‘The Morphology of Nominalizations and the Syntax of VP’. In *Quantification, Definiteness and Nominalization*, edited by Anastasia Giannakidou and Monika Rathert, 24:321–43. Oxford Studies in Theoretical Linguistics.
- Harley, Heidi, and Rolf Noyer. 1999. ‘Distributed Morphology’. *GLoT* 4 (4): 3–9.
- Hazout, Ilan. 1995. ‘Action Nominalizations and the Lexicalist Hypothesis’. *Natural Language and Linguistic Theory* 13 (3): 355–404.
- Heim, Irene. 1982. ‘The Semantics of Definite and Indefinite Noun Phrases’. PhD Dissertation, Amherst: University of Massachusetts.
- . 1987. ‘Where Does the Definiteness Restriction Apply Evidence from the Definiteness of Variables’. In *The Representation of (In)Definiteness(14)*, edited by Eric J. Reuland and Alice G. B. ter Meulen, 21–42. Cambridge, Massachusetts: MIT Press.
- . 1992. ‘Presupposition Projection and the Semantics of Attitude Verbs’. *Journal of Semantics* 9: 183–221.
- Heim, Irene, and Angelika Kratzer. 1998. *Semantics in Generative Grammar*. Malden, MA.: Blackwell Publishers.
- Hempel, Carl, and Paul Oppenheim. 1948. ‘Studies in the Logic of Explanation’. *Philosophy of Science* 15 (2): 135–75.
- Higginbotham, James. 1980. ‘Pronouns and Bound Variables’. *Linguistic Inquiry* 11: 679–708.
- . 1983. ‘Logical Form, Binding, and Nominals’. *Linguistic Inquiry* 14: 395–420.

- . 1985. 'On Semantics'. *Linguistic Inquiry* 16: 547–93.
- Hintikka, Jaakko. 1962. *Knowledge and Belief*. Cornell University Press.
- . 1969. 'Semantics for Propositional Attitudes'. In *Philosophical Logic*, edited by J. W. Davis, D. J. Hockney, and W. K. Wilson, 21–45. Dordrecht: Reidel.
- Hornsby, Jennifer. 1980. *Actions*. London: Routledge & Kegan Paul.
- Hornstein, Norbert. 1999. 'Movement and Control'. *Linguistic Inquiry* 30 (1): 69–96.
- Hornstein, Norbert, and Maria Polinsky, eds. 2010. *Movement Theory of Control*. Amsterdam: John Benjamins.
- Jackendoff, Ray. 1972. *Semantic Interpretation in Generative Grammar*. Cambridge: Cambridge University Press.
- Jackendoff, Ray, and Peter Culicover. 2003. 'The Semantic Basis of Control in English'. *Language* 79 (3): 517–556.
- Jaeggli, Osvaldo, and Kenneth Safir. 1989. 'The Null Subject Parameter and Parametric Theory'. In *The Null Subject Parameter*, edited by Osvaldo Jaeggli and Kenneth Safir, 1–44. Kluwer.
- Johnson, Kyle. 2009. 'Gapping Is Not (VP-) Ellipsis'. *Linguistic Inquiry* 40 (2): 289–328.
- Kamp, Hans, and Uwe Reyle. 1993. *From Discourse to Logic*. Dordrecht: Kluwer Academic Publishers.
- Katz, Graham. 2001. '(A)Temporal Complements'. In *Auditor Vox Sapientiae*, edited by Caroline Féry and Wolfgang Sternefeld, 240–58. Berlin: Akademie Verlag.
- . 2004. 'The Temporal Interpretation of Finite and Non-Finite Complement Clauses of Attitude Verbs'. Ms. University of Osnäbruck.
- Katz, Jerrold J. 1970. 'Interpretive Semantics vs Generative Semantics'. *Foundations Of Language* 6 (2): 220–259.
- Kaufmann, Stefan. 2005. 'Conditional Truth and Future Reference'. *Journal of Semantics* 22: 231–80.
- Kayne, Richard. 1994. *The Antisymmetry of Syntax*. Cambridge, MA.: MIT Press.
- Kearns, Kate. 1988. 'Light Verbs in English'. MA Thesis, Cambridge, MA: MIT.
- King, Jeffrey C. 2002. 'Designating Propositions'. *Philosophical Review* 111: 341–71.
- Klein, Ewan, and Ivan Sag. 1985. 'Type-Driven Translation'. *Linguistics and Philosophy* 8: 163–202.
- Kornfilt, Jaklin. 1997. *Turkish*. Edited by Bernard Comrie. Routledge Descriptive Grammars. London and New York: Routledge.
- Kratzer, Angelika. 1981. 'The Notional Category of Modality'. In *Words, Worlds and Contexts*, edited by J. Eikmeyer and H. Riesner, 38–74. Berlin: Walter de Gruyter.
- . 1996. 'Severing the External Argument from Its Verb'. In *Phrase Structure and the Lexicon*, edited by Johan Rooryck and Laurie Zaring, 109–137. Dordrecht, The Netherlands: Kluwer Academic Publishers.
- . 2003. 'The Event Argument and the Semantics of Verbs'. Ms. University of Massachusetts, Amherst.
- . 2004. 'Telicity and the Meaning of Objective Case'. In *The Syntax of Time*, edited by Jacqueline Guéron and Jacqueline Lecarme, 398–423. Cambridge, MA.: MIT Press.
- . 2005. 'Building Resultatives'. In *Event Arguments in Syntax, Semantics, and Discourse*, edited by Claudia Maienborn and Angelika Wöllstein-Leisten, 177–212. Tübingen: Niemeyer.
- . 2006. 'Decomposing Attitude Verbs'.
- . 2009. 'Making a Pronoun: Fake Indexicals as Windows into the Properties of Pronouns'. *Linguistic Inquiry* 40 (2): 187–237.
- Krifka, Manfred. 1989. 'Nominal Reference, Temporal Constitution and Quantification in Event Semantics'. In *Semantics and Contextual Expression*, edited by K Bartsch, J van Benthem, and P van Emde Boas, 75–115. Dordrecht: Foris.

- . 1992. 'Thematic Relations as Links between Nominal Reference'. In *Lexical Matters*, edited by Ivan A. Sag and Anna Szabolcsi, 29–54. Stanford, California: Center for the Study of Language and Information.
- . 1998. 'The Origins of Telicity'. In *Events and Grammar*, edited by Susan Rothstein, 197–236. Dordrecht: Kluwer Academic Publishers.
- Landau, Idan. 1999. 'Elements of Control'. Ph. D. Dissertation, MIT.
- . 2000. *Elements of Control: Structure and Meaning in Infinitival Constructions*. Studies in Natural Language and Linguistic Theory No. 51. Dordrecht, Boston, London: Kluwer Academic Publishers.
- . 2003. 'Movement out of Control'. *Linguistic Inquiry* 34 (3): 471–498.
- . 2004. 'The Scale of Finiteness and the Calculus of Control'. *Natural Language and Linguistic Theory* 22 (4): 811–877.
- . 2006. 'Severing the Distribution of PRO from Case'. *Syntax* 9 (2): 153–170.
- . 2008. 'Two Routes of Control: Evidence from Case Transmission in Russian'. *Natural Language and Linguistic Theory* 26 (4): 877–924.
- . 2010. 'The Explicit Syntax of Implicit Arguments'. *Linguistic Inquiry* 41 (3): 357–388.
- . 2013. *Control in Generative Grammar: A Research Companion*. Cambridge: Cambridge University Press.
- . 2015. *A Two-Tiered Theory of Control*. Cambridge, MA.: MIT Press.
- Landman, Fred. 1992. 'The Progressive'. *Natural Language Semantics* 1 (1): 1–32.
- Lasersohn, Peter. 1995. *Plurality, Conjunction and Events*. Dordrecht, The Netherlands: Kluwer Academic Publishers.
- Lasnik, Howard. 1988. 'Subjects and the Theta-Criterion'. *Natural Language and Linguistic Theory* 6 (1): 1–17.
- Lebeaux, David. 1984. 'Anaphoric Binding and the Definition of PRO'. In *Proceedings of North Eastern Linguistic Society 14*, edited by Charles Jones and Peter Sells. Amherst, MA: GLSA.
- . 1985. 'Locality and Anaphoric Binding'. *The Linguistic Review* 4: 343–363.
- Lecarme, Jacqueline. 1996. 'Tense in the Nominal System: The Somali DP'. In *Studies in Afroasiatic Grammar*, edited by Jacqueline Lecarme, Jean Lowenstamm, and Ur Shlonsky. The Hague: Holland Academic Graphics.
- . 1999. 'Nominal Tense and Tense Theory'. In *Empirical Issues in Formal Syntax and Semantics*, edited by Francis Corblin, Carmen Dobrovie-Sorin, and Jean-Marie Marandin, 2:332–54. The Hague: Holland Academic Graphics.
- . 2004. 'Tense in Nominals'. In *The Syntax of Time*, edited by Jacqueline Guéron and Jacqueline Lecarme, 441–75. Cambridge, MA.: MIT Press.
- . 2008. 'Tense and Modality in Nominals'. In *Time and Modality*, edited by Jacqueline Guéron and Jacqueline Lecarme, 195–225. Heidelberg: Springer.
- Lee-Schoenfeld, Vera. 2006. 'German Possessor Datives: Raised and Affected'. *Journal of Comparative Germanic Linguistics* 9 (2): 101–142.
- Levin, Beth. 1993. *English Verb Classes and Alternations*. Chicago: University of Chicago Press.
- Levin, Beth, and Malka Rappaport Hovav. 1995. *Unaccusativity: At the Syntax - Lexical Semantics Interface*. Linguistic Inquiry Monograph 26. Cambridge, MA: MIT Press.
- . 2013. 'Lexicalized Meaning and Manner/Result Complementarity'. In *Studies in the Composition and Decomposition of Event Predicates*, edited by B. Arsenijević, B. Gehrke, and R. Marín, 49–70. Dordrecht: Springer Netherlands.
- Lewis, David. 1973. 'Causation'. *Journal of Philosophy* 70 (17): 556–567.
- . 1979. 'Attitudes De Dicto and Attitudes De Se'. *The Philosophical Review* 88: 513–43.

- Lieber, Rochelle. 1992. *Deconstructing Morphology*. Chicago, Illinois: The University of Chicago Press.
- . 2004. *Morphology and Lexical Semantics*. Cambridge: Cambridge University Press.
- . 2016. *English Nouns: The Ecology of Nominalization*. Vol. 150. Cambridge: Cambridge University Press.
- Lohndal, Terje. 2014. *Phrase Structure and Argument Structure: A Case Study of the Syntax-Semantics Interface*. OUP Oxford.
- Manzini, Rita. 1983. 'On Control and Control Theory'. *Linguistic Inquiry* 14: 421–46.
- Marantz, Alec. 1984. *On the Nature of Grammatical Relations*. Cambridge, MA: MIT Press.
- . 1997. 'No Escape from Syntax: Don't Try Morphological Analysis in the Privacy of Your Own Lexicon'. In *University of Pennsylvania Working Papers in Linguistics Vol. 4.2*, edited by Alexis Dimitriadis, Laura Siegel, Clarissa Surek-Clark, and Alexander Williams, 201–225. University of Pennsylvania.
- . 2001. 'Words'. In *WCCFL XX*. USC, LA.
- Martin, Fabienne, and Florian Schäfer. 2014. 'Causation at the Syntax/Semantics Interface'. In *Causation in Grammatical Structures*, edited by Bridget Copley and Fabienne Martin, 209–44. Oxford: Oxford University Press.
- Martin, Roger. 1996. 'A Minimalist Theory of PRO and Control'. Doctoral dissertation, University of Connecticut.
- . 2001. 'Null Case and the Distribution of PRO'. *Linguistic Inquiry* 32 (1): 141–66.
- McElree, Brian, Matthew Traxler, Martin Pickering, Rachel Seely, and Ray Jackendoff. 2001. 'Reading Time Evidence for Enriched Semantic Composition'. *Cognition* 78: B15–25.
- Moltmann, Friederike. 2013. *Abstract Objects and the Semantics of Natural Language*. Oxford: Oxford University Press.
- Montague, Richard. 1970. 'Universal Grammar'. *Theoria* 36 (3): 373–98.
- . 1974. 'The Proper Treatment of Quantification in Ordinary English'. In *Formal Philosophy: Selected Papers of Richard Montague*, edited by Richmond H. Thomason, 247–270. New Haven: Yale University Press.
- Moore, John, and David Perlmutter. 2000. 'What Does It Take to Be a Dative Subject?' *Natural Language and Linguistic Theory* 18 (2): 373–416.
- Morgan, Jerry L. 1970. 'On the Criterion of Identity for Noun Phrase Deletion'. In *Chicago Linguistics Society*, 6:380–89. Chicago, IL.
- Moulton, Keir. 2009. 'Natural Selection and the Syntax of Clausal Complementation'. University of Massachusetts at Amherst.
- . 2014. 'Simple Event Nominalizations: Roots and Their Interpretation'. In *Cross-Linguistic Investigations of Nominalization Patterns*, edited by Ileana Paul, 119–44. Amsterdam, Philadelphia: John Benjamins.
- Neeleman, Ad, and Hans Van de Koot. 2012. 'The Linguistic Expression of Causation'. In *The Theta System: Argument Structure at the Interface*, edited by Martin Everaert, Marijana Marelj, and Tal Siloni, 20–51. Oxford: Oxford University Press.
- Newmeyer, Frederick. 1975. *English Aspectual Verbs*. Paris: Mouton.
- Nissenbaum, Jon. 2005. 'Kissing Pedro Martinez: (Existential) Anankastic Conditionals and Rationale Clauses'. In *Proceedings of SALT XV*, edited by Effi Georgala and Jonathan Howell, 134–151. Cornell University, Ithaca, NY: CLC Publications.
- Noonan, Michael. 1985. 'Complementation'. In *Language Typology and Syntactic Description: Complex Constructions*, 42–140. Cambridge: Cambridge University Press.
- Nordlinger, Rachel, and Louisa Sadler. 2008. 'When Is a Temporal Marker Not a Tense? Reply to Tonhauser 2007'. *Language* 84 (2): 325–331.

- Ogihara, Toshiyuki. 1995a. 'Double-Access Sentences and Reference to States'. *Natural Language Semantics* 3: 177–210.
- . 1995b. 'The Semantics of Tense in Embedded Clauses'. *Linguistic Inquiry* 26 (4): 663–680.
- . 1996. *Tense, Attitude and Scope*. Dordrecht: Kluwer.
- . 2007. 'Tense and Aspect in Truth-Conditional Semantics'. *Lingua* 177: 392–418.
- Pancheva, Roumyana, and Arnim von Stechow. 2004. 'On the Present Perfect Puzzle'. In *Proceedings of the North East Linguistic Society 34*, edited by Keir Moulton and Matthew Wolf, 2:469–484. University of Massachusetts at Amherst: Graduate Linguistic Student Association.
- Parsons, Terence. 1990. *Events in the Semantics of English: A Study in Subatomic Semantics*. Vol. 21. Current Studies in Linguistics. MIT Press.
- Partee, Barbara. 1987. 'Noun-Phrase Interpretation and Type-Shifting Principles'. In *Studies in Discourse Representation Theory and the Theory of Generalized Quantifiers*, edited by Jeroen Groenendijk. Dordrecht: Foris.
- Partee, Barbara Hall, and Mats Rooth. 1983. 'Generalized Conjunction and Type Ambiguity'. In *Meaning, Use and Interpretation of Language*, edited by R. Bäuerle, C. Schwarze, and Arnim von Stechow, 362–383. de Gruyter.
- Pearson, Hazel. 2013. 'The Sense of Self: Topics in the Semantics of De Se Expressions'. Ph. D. Dissertation, Harvard University.
- . 2016. 'The Semantics of Partial Control'. *Natural Language & Linguistic Theory* 34 (2): 691–738.
- Percus, Orin, and Uli Sauerland. 2003a. 'On the LFs of Attitude Reports'. In *Proceedings of Sinn Und Bedeutung*, edited by Matthias Weisberger, 7:228–42. Konstanz: Universität Konstanz.
- . 2003b. 'Pronoun Movement and Dream Reports'. In *North East Linguistics Society*, 33:347–66.
- Perlmutter, David. 1970. 'The Two Verbs "Begin"'. In *Readings in English Transformational Grammar*, edited by R. A. Jacobs and Peter S. Rosenbaum, 107–119. Waltham, Massachusetts: Ginn.
- . 1978. 'Impersonal Passives and the Unaccusative Hypothesis'. In *Proceedings of the Fourth Annual Meeting of the Berkeley Linguistics Society*, 157–89. Berkeley: Berkeley Linguistics Society, University of California.
- Pietroski, Paul. 2000. 'On Explaining That'. *Journal of Philosophy* 97: 655–62.
- . 2008. *Causing Actions*. Oxford: Oxford University Press.
- Piñango, Maria Mercedes, and Ashwini Deo. 2016. 'Reanalyzing the Complement Coercion Effect through a Generalized Lexical Semantics for Aspectual Verbs'. *Journal of Semantics* 33: 359–408.
- Piñón, Christopher. 2001. 'A Finer Look at the Causative-Inchoative Alternation'. In *Proceedings of SALT XI*, edited by Rachel Hastings, Brendan Jackson, and Zsafia Zvolenszky, 346–364. Cornell University, Ithaca, NY: CLC Publications.
- . 2008. 'Aspectual Composition with Degrees'. In *Adjectives and Adverbs*, edited by Louise McNally and Christopher Kennedy, 183–119. Oxford: Oxford University Press.
- Pires, Acrisio. 2001. 'Clausal and TP-Defective Gerunds: Control without Tense'. In *North East Linguistic Society*, edited by Minjoo Kim and Uri Strauss, 390–406. Georgetown University: GLSA.
- . 2006. *The Minimalist Syntax of Defective Domains*. Amsterdam/Philadelphia: John Benjamins Publishing Company.
- . 2007. 'The Derivation of Clausal Gerunds'. *Syntax* 10 (2): 165–203.
- Prior, Arthur N. 1971. *Objects of Thought*. Oxford: Clarendon Press.
- Pryor, James. 2007. 'Reasons and That-Clauses'. *Philosophical Issues* 17 (1): 217–44.

- Punske, Jeffrey Paul. 2012. 'Aspects of the Internal Structure of Nominalization: Roots, Morphology and Derivation'. Ph. D. Dissertation, The University of Arizona.
- Pustejovsky, James, and Pierrette Bouillon. 1995. 'Aspectual Coercion and Logical Polysemy'. *Journal of Semantics* 12 (2): 133–62.
- Pylkkänen, Liina. 2002. 'Introducing Arguments'. PhD dissertation, MIT.
- . 2008. *Introducing Arguments*. Cambridge, Massachusetts: MIT Press.
- Pylkkänen, Liina, and Brian McElree. 2006. 'The Syntax-Semantics Interface: On-Line Composition of Sentence Meaning'. In *Handbook of Psycholinguistics*, 2nd ed., 539–79. Academic Press.
- Radford, Andrew. 1988. *Transformational Grammar*. Cambridge: Cambridge University Press.
- Ramchand, Gillian Catriona. 2008. *Verb Meaning and the Lexicon*. Cambridge Studies in Linguistics. Cambridge, United Kingdom: Cambridge University Press.
- Reinhart, Tanya. 2000. 'The Theta System: Syntactic Realization of Verbal Concepts'. In *Concepts, Syntax and Their Interface: The Theta System*, edited by Martin Everaert, Marijana Marelj, and Eric Reuland, 1–111. Cambridge, MA.: MIT Press.
- Reuland, Eric. 1983. 'Governing -Ing'. *Linguistic Inquiry* 14 (1): 101–136.
- . 2011. 'What's Nominal in Nominalizations?'. *Lingua* 121 (7): 1283–96.
- Rizzi, Luigi. 1978. 'A Restructuring Rule in Italian Syntax'. In *Recent Transformational Studies in European Languages*, edited by Samuel Jay Keyser, 113–58. Cambridge, MA: MIT Press.
- . 1982. *Issues in Italian Syntax*. Dordrecht: Foris.
- Roeper, Tom. 1987. 'Implicit Arguments and the Head-Complement Relation'. *Linguistic Inquiry* 18 (2): 267–310.
- . 1993. 'Explicit Syntax in the Lexicon: The Representation of Nominalizations'. In *Semantics and the Lexicon*, edited by James Pustejovsky, 185–220. Dordrecht: Kluwer.
- Rosenbaum, Peter S. 1967. *The Grammar of English Predicate Complement Constructions*. Cambridge, MA: MIT Press.
- . 1970. 'A Principle Governing Deletion in English Sentential Complementation'. In *Readings in English Transformational Grammar*, edited by Roderick Jacobs and Peter Rosenbaum, 20–29. Ginn: Waltham, MA.
- Ross, John Robert. 1969. 'On the Cyclic Nature of English Pronominalization'. In *Modern Studies in English*, edited by David A. Reibel and Sanford Schane, 187–200. Englewood Cliffs, N.J.: Prentice Hall.
- Safir, Ken. 1984. 'Multiple Variable Binding'. *Linguistic Inquiry* 15: 603–38.
- . 1987. 'The Syntactic Projection of Lexical Thematic Structure'. *Natural Language and Linguistic Theory* 5: 561–601.
- . 1996. 'Derivation, Representation, and the Resumption: The Domain of Weak Crossover'. *Linguistic Inquiry* 27 (2): 313–339.
- . 2004. *The Syntax of (In)Dependence*. MIT Press.
- Sag, Ivan A., and Carl Pollard. 1991. 'An Integrated Theory of Complement Control'. *Language* 67 (1): 63–113.
- Sauerland, Uli. 1998. 'The Meaning of Chains'. Cambridge, MA: MIT.
- Schachter, Paul. 1973. 'Focus and Relativization'. *Language* 49 (1): 19–46.
- Schäfer, Florian. 2008. *The Syntax of (Anti-)Causatives. External Arguments in Change-of-State Contexts*. Amsterdam/Philadelphia: John Benjamins.
- . 2009. 'The Causative Alternation'. *Language and Linguistics Compass* 3 (2): 641–81.
- Schlenker, Philippe. 1999. 'Propositional Attitudes and Indexicality: A Cross-Categorical Approach'. Ph. D. Dissertation, MIT.
- . 2003. 'A Plea for Monsters'. *Linguistics and Philosophy* 26: 29–120.

- Searle, John. 1983. *Intentionality: An Essay in the Philosophy of Mind*. New York: Cambridge University Press.
- . 1995. *The Construction of Social Reality*. Simon and Schuster.
- Sharvit, Yael. 2003. 'Trying to Be Progressive: The Extensionality of Try'. *Journal of Semantics* 20: 403–45.
- Sichel, Ivy. 2010. 'Towards a Typology of Control in DP'. In *Movement Theory of Control*, edited by Norbert Hornstein and Maria Polinsky, 245–66. Amsterdam: John Benjamins.
- Sigurðsson, Halldór Ármann. 2002. 'To Be an Oblique Subject: Russian vs. Icelandic'. *Natural Language and Linguistic Theory* 20 (4): 691–724.
- . 2008. 'The Case of PRO'. *Natural Language and Linguistic Theory* 26 (2): 403–450.
- Ślodołowicz, Szymon. 2006. 'Control in Polish Complement Clauses'. Ph. D. Dissertation, University of Kiel.
- Smirnova, Anastasia. 2015. 'Nominalization in English: Semantic Restrictions on Argument Realization'. *Linguistic Inquiry* 46 (3): 568–79.
- Smith, Carlota. 1991. *The Parameter of Aspect*. Dordrecht: Kluwer Academic Publishers.
- Stechow, Arnim von. 2009. 'Tenses in Compositional Semantics'. In *The Expression of Time*, edited by W. Klein and P. Li, 129–66. Berlin: Mouton de Gruyter.
- Stephenson, Tamina. 2007. 'Towards a Theory of Subjective Meaning'. Ph. D. Dissertation, MIT.
- . 2010a. 'Control in Centred Worlds'. *Journal of Semantics* 27: 409–36.
- . 2010b. 'Vivid Attitudes: Centred Situations in the Semantics of *Remember* and *Imagine*'. In *Semantics and Linguistic Theory*, 20:147–60.
- Stiebels, Barbara. 2007. 'Towards a Typology of Complement Control'. *ZAS Papers in Linguistics* 47 (8).
- Stowell, Timothy. 1982. 'The Tense of Infinitives'. *Linguistic Inquiry* 1 (3): 561–570.
- Stroik, Thomas S. 1992. 'Middles and Movement'. *Linguistic Inquiry* 23 (1): 127–138.
- Sundaresan, Sandhya, and Thomas McFadden. 2009. 'Subject Distribution in Tamil and Other Languages: Selection vs. Case'. *Journal of South Asian Linguistics* 2 (1): 5–34.
- Szabolcsi, Anna. 1992. 'Subject Suppression or Lexical PRO?: The Case of Derived Nominals in Hungarian'. *Lingua* 86 (2–3): 149–76.
- Tenny, Carol. 1987. 'Grammaticalizing Aspect and Affectedness'. Ph. D. Dissertation, MIT.
- . 1994. *Aspectual Roles and the Syntax/Semantics Interface*. Dordrecht: Kluwer.
- Thomason, Richmond H. 1970. 'Indeterminist Time and Truth-Value Gaps'. *Theoria* 36: 254–81.
- Todorović, Neda, and Susanne Wurmbrand. 2015. 'Da, Da, Da - (In)Finite Possibilities'. In . Goerg-August-Universität, Göttingen.
- Tonhauser, Judith. 2002. 'A Dynamic Semantics Account of the Temporal Interpretation of Noun Phrases'. In *Proceedings of SALT XII*, edited by Brendan Jackson, 286–305. Cornell University, Ithaca, NY: CLC Publications.
- . 2007. 'Nominal Tense? The Meaning of Guaraní Nominal Temporal Markers'. *Language* 83: 831–69.
- . 2008. 'Defining Crosslinguistic Categories: The Case of Nominal Tense (Reply to Nordlinger and Sadler)'. *Language* 84 (2): 332–342.
- Travis, Lisa. 2010. *Inner Aspect*. New York: Springer.
- Traxler, Matthew, Martin Pickering, and Brian McElree. 2002. 'Coercion in Sentence Processing: Evidence from Eye-Movements and Self-Paced Reading'. *Journal of Memory and Language* 47: 530–47.
- Urk, Coppe van. 2011. 'Visser's Generalization: A Window into the Syntax of Control'. Ms. MIT.

- Vendler, Zeno. 1957. 'Verbs and Times'. *Philosophical Review* 56: 143–60.
- Vergnaud, Jean-Roger. 1974. 'French Relative Clauses'. Doctoral dissertation, MIT.
- Vinokurova, Nadya. 2005. 'Lexical Categories and Argument Structure: A Study with Reference to Sakha'. Doctoral Dissertation, Utrecht University.
- Williams, Edwin. 1980. 'Predication'. *Linguistic Inquiry* 11: 203–38.
- . 1982. 'The NP Cycle'. *Linguistic Inquiry* 13 (2): 277–295.
- . 1985. 'PRO and Subject of NP'. *Natural Language and Linguistic Theory* 3 (3): 297–316.
- . 1987. 'Implicit Arguments, the Binding Theory, and Control'. *Natural Language and Linguistic Theory* 5 (2): 151–180.
- Wolff, Phillip. 2003. 'Direct Causation in the Linguistic Coding and Individuation of Causal Events.' *Cognition* 88 (1): 1–48.
- Wunderlich, Dieter. 1997. 'Cause the Structure of Verbs'. *Linguistic Inquiry* 28 (1): 27–68.
- Wurmbrand, Susanne. 1998. 'Infinitives'. Cambridge: Massachusetts Institute of Technology.
- . 1999. 'Modal Verbs Must Be Raising Verbs'. In *Proceedings of the 18th West Coast Conference on Formal Linguistics*, 599–612.
- . 2001. *Infinitives. Restructuring and Clause Structure*. Studies in Generative Grammar 55. Berlin and New York: Mouton de Gruyter.
- . 2002. 'Syntactic vs. Semantic Control'. In *Studies in Comparative Germanic Syntax: Proceedings of the 15th Workshop on Comparative Germanic Syntax*, 53:93–127. Amsterdam: John Benjamins.
- . 2006. 'Verb Clusters, Verb Raising, and Restructuring'. In *The Blackwell Companion to Syntax*, edited by Martin Everaert and Henk van Riemsdijk, 5:229–343. Blackwell.
- . 2014. 'Tense and Aspect in English Infinitives'. *Linguistic Inquiry* 45 (3): 403–47.