Control in Free Adjuncts: The "Dangling Modifier" in English

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Abstract

In this dissertation, I present an account of the control of free adjuncts that relies on incremental processing. While many free adjuncts are controlled by the subject of the matrix clause (1a), this is not always the case. Some seem to be controlled by non-subject elements within the matrix clause (1b), others are apparently controlled by the discourse topic (1c), and still others involve the perceiver of the matrix clause in logophoric control (1d). These control patterns have raised the ire of many grammatical prescriptivists, who often label such constructions as 'danglers'.

(1) a. Turning the corner on his motorcycle, he saw a church.
b. Turning the corner on his motorcycle, his grip began to slip.
c. While under development, they put all other projects on hold.
d. Turning the corner on my motorcycle, a church came into view.

There have been several explanations of these patterns. Many researchers see free adjuncts as obligatorily controlled by the subject (1a) except where this is not possible, in which case logophoric control arises (1b,d). But such approaches cannot account for (1c), in which the controller is inanimate and thus incapable of perceiving anything. Other researchers regard non-subject control as the result of either an attempt to establish semantic coherence between two apparently unrelated clauses or an exhaustive search for alternative controllers based on a complex set of syntactic, semantic, and pragmatic clues. These approaches predict processing difficulty whenever a mismatch occurs, but most language users process sentences like (1b-d) fairly easily.

My central claim is that the patterns found in adjunct control arise because the establishment of control continues throughout the process of understanding a given sentence. The language user, on encountering a free adjunct, guesses at a suitable controller. Disruption occurs when another potential controller arrives that is at least as adequate as the current guess. I support this claim through analysis of an extensive collection of attested examples, taking care to cover the relevant syntactic, semantic, pragmatic, and processing facts. I also emphasise how important it is for theoretical and descriptive studies to make specific predictions that could in principle be vindicated or falsified by future work in historical syntax or experimental psycholinguistics.

Lay summary

Complaints about the use of English often appear in newspaper opinion columns and letters to the editor, but these grievances can only rarely be justified. There are some common targets, including split infinitives, stranded prepositions, and the use of *less* with countable nouns, but none of these is inherently bad; purging them might make your writing more formal, but it won't make it any clearer or more effective.

The dangling modifier is different. Danglers can make the reader stumble and come to unexpected conclusions about who is involved in what sort of situation. Take this blurb for a mystery novel: "Violent, clever and funny, I loved it!" The person who wrote the blurb probably intended to describe the *book* as "violent, clever and funny", but it sounds as though he is talking about *himself*. I have read this sentence many times and know what he wants to say, but that knowledge does not seem to make the incorrect reading go away.

Teachers and editors circle danglers with red ink and claim that they should always be understood with reference to the subject of the main part of the sentence (in this example, "I"). The problem with this advice is that even the most skilful authors do not follow it. While danglers can be difficult to interpret, they are naturally produced by nearly everyone who speaks or writes in English. It is puzzling that there should be such a mismatch between the way we understand language and the way we produce it. Are all danglers equally bad? If not, then why are some better than others?

There have been a few attempts to address these questions, but their answers have been incomplete. In some cases, not all of the naturally-occurring data can be accounted for, while in others, elaborate searches are required that seem to predict that these sentences should cause considerable difficulty for the listener. On the contrary, some danglers are so easy to process that they are nearly undetectable. Each of the prior approaches brings some insight, but none provides a comprehensive approach.

In this dissertation, I have attempted to tie the insights of these studies together using a single mechanism: the gradual processing of language. We do not wait until the end of a sentence to try to understand it. Instead, we jump right in from the start and do our best with the information we have. Every new bit of language we hear or read helps us to know more about what the other person is trying to communicate. We can better understand why a given dangler is good or bad by looking at the moment-to-moment experience of the person trying to make sense of what is being said. It turns out that some danglers can even serve an expressive purpose, making our writing better. They are not all bad.

Acknowledgements

I was worried that I might forget to thank a friend or colleague in my acknowledgements. My way out of this problem was to reserve this section for two groups of people: those who helped me write the dissertation and those who had to live with the inconvenience of having a dissertation writer in the house.

My PhD studies were supported by a College Research Studentship. I would like to express my gratitude to the board for their decision to put that support in place.

The dissertation itself was improved by the discussions I had with Peter Ackema, Caroline Heycock, Bettelou Los, Hannah Rohde, Mark Steedman, Patrick Sturt, and Rob Truswell. I am sure that each of them would find plenty to disagree with in what follows; the mistakes are on me, not them.[1]

My examiners, Graeme Trousdale, John Payne, and Doug Arnold, thoroughly probed all the spots that I knew they would, but did so in enlightening ways that I could not have predicted.

My supervisors, Geoffrey K. Pullum and Nikolas Gisborne, have provided comments and questions that made this account much better than it would otherwise have been. I regret not having more of this dissertation done earlier in order to take better advantage of them.

Geoff, you've been supportive of me beyond what I deserve.

Nik, thanks for applying a little heat when I needed it.

I must finish by offering, with love, my apologies to my family, Saša and Isaac, for having taken so long.

[1] (Feb 2021) There are fewer mistakes in this version of the dissertation. Simon Goodwin and Brett Reynolds kindly wrote to alert me to some particularly sneaky typographical errors on pages 25, 77, and 114 in the version I initially posted. I could correct these without altering the page breaks.

Preface

I have sought, wherever possible, to use attested examples. The collection of corpora that Mark Davies maintains has been absolutely essential in this. I have tagged sentences from these resources with standard codes (e.g., COCA, COHA, etc.) instead of regular citations. A complete list of corpora is provided in appendix B.

Danglers are like jokes in that it is often unwieldy to document (and sometimes difficult to determine) the path a given example has taken to arrive in my own collection. Geoff Pullum and Arnold Zwicky have provided a particularly large number of examples through a mix of blog posts, handouts, and personal communication. These are tagged with GKP and AMZ. Examples from the Internet are usually tagged with WEB. Those taken from other people's research are, of course, cited in the normal fashion.

Occasionally, I have had to invent examples to draw contrasts with minimal distraction, to show that something is not acceptable, or to explore the limits of what is acceptable. These inventions are untagged.

It might seem that my reliance on attested examples borders on a fetish for them. It is true that they can complicate things and distract the reader from the issue at hand. It is also true that I often provide three or four examples where one would do. But many competing analyses have claimed things to be ungrammatical that are simply dispreferred. And at the same time, it is possible to find pretty much anything once if you look hard enough.

My aim throughout has been to get the descriptive facts right. In some circles, this is seen as less important than getting a subset of the facts to fall out from a simple set of rules shared with other phenomena. I do not want to say that theoretical elegance is unimportant, but rather that coming up with a correct description is tricky enough and interesting in itself. I will be satisfied if I have made the terrain any clearer for others.

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Declaration

I declare that this dissertation is mine and that I wrote everything that is not clearly attributed to someone else. I also declare that I have never used any part of this dissertation for any other degree or qualification.

James Donaldson
31 August 2020

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Chapter 1

Introduction

1.1 Danglers

When Postal began his 1971 investigation into crossover effects, he could boast that the phenomena he intended to discuss had never been noticed despite centuries of studies into English grammar. I can make no such claim about the varying control of free adjuncts. People have long frowned at passages like (1), which is from a critically disparaged yet commercially successful novel.

(1) Suddenly, he sits up and tugs my panties off and throws them on the floor. Pulling off his boxer briefs, his erection springs free. Holy cow! (E. L. James (2011) *50 Shades of Grey*)

As readers, we experience a moment of puzzlement here because we assume that the underlined clause should be understood as predicative of the overt subject of the matrix clause (i.e., *his erection*).[1] When we stumble, it is not that we are being linguistically conservative. Rather, the sloppy and misleading writing is to blame.

[1]This is an oversimplification for the sake of brevity. In some cases, an adjunct cannot look to an overt subject because the matrix verb itself (here, *order*) itself requires control.

(i) To order your transcript using this service, please click the link below. (iWeb)

Similarly, imperatives can host adjuncts despite not having overt subjects. What matters here is that the same person is approaching and taking corners.

(ii) Approaching from Kilkenny, take the first right in Inistioge... (iWeb)

Free adjuncts with atypical control, like (1), are the subject matter for this dissertation. They are commonly referred to as dangling modifiers[2] (henceforth **danglers**) in clear disapproval. Prescriptivist grievances, being necessarily aimed at language as it is actually used, generally do not involve real grammatical errors, but many danglers do seem objectionable, at least at first glance.

So do the complainers have a point? They would seem to have at least some linguists on their side. While few studies treat danglers directly, a great number of them touch on the topic to some degree, including Rosenbaum (1970), Mohanan (1983: 650-1), Clark (1985: 291-5), Hopper (1991: 31),[3] Hopper & Traugott (2003 [1993]: 108), Hornstein (1999: 88-90), Hornstein (2003: 30-2), Boeckx & Hornstein (2003: 270), Culicover & Jackendoff (2005: 425f.),[4] Pires (2007: 176-80), Boeckx et al. (2010: 87-91), Kwon & Sturt (2014: 68), Fonteyn & Cuyckens (2014: 15), and Gerard et al. (2018: 2). These studies all state or assume at some point that the understood subject of the adjunct should be referentially identical to the subject of the matrix clause, so they would agree that *his erection* is the understood subject of *pulling off his boxer briefs*. This assumed coreference will be referred to as the **subject coreference rule**.[5] But simultaneously, they must (and sometimes do) acknowledge the fact that not all sentences with dangling modifiers are completely unacceptable. When these acknowledgements come, they can sound fairly grudging. Mohanan (1983), for instance, grants in a footnote that (2) is not unacceptable.

(2) While studying at MIT, it is easy to meet several linguists. (Mohanan 1983: 651)

But sentences like that, he says, are relatively marginal and can occur only when the

[2]We can retain this term, even though it is often used inaccurately. Prescriptivists usually suppose that danglers 'modify' the subject of the matrix, but the modification is actually of the entire matrix clause. What dangles is the control relation.

[3]Hopper (1991) contrasts free adjuncts with deverbal prepositions (see section 2.2.1), but claims that the former require subject control, at least when written.

[4]Culicover & Jackendoff do not claim this is absolute: they point to the possibility of control by implicit arguments in the event of the adjunct's attaching within a noun phrase (e.g., [$_{\text{NP}}$*A needless argument without looking at the evidence*] *should be avoided.* (Culicover & Jackendoff 2005: 426)).

[5]For now, we will put aside the question of what the syntactic status of this rule is. But it is possible at least in principle to attribute a tendency towards coreference to pragmatic inference: coreference becomes more and more the standard assumption when less information about the understood subject is provided.

normal reading has been ruled out (here by the impossibility of pleonastic *it* being selected by *studying*). This is a common theme in the literature: danglers are supposed to result in bad sentences that might be partially salvaged in some instances.

And yet we cannot write all danglers off as the marginal product of writers who are inexperienced or under pressure to meet deadlines. Take the following examples, which have all been drawn from the work of Virginia Woolf. In each case, the underlined predicative phrase or phrases cannot be understood as controlled by the matrix subject.

(3) a. While delighting in their richness, force, and variety, and finding every judgement, however emphatic, proper in its place, it seldom occurs to us to connect these sweeping assertions and undeniable convictions with anything so minute as a human being. (*Addison*)

b. Passing down the streets of Croydon twenty years ago, the violet loops of ribbon in the draper's window spangled in the electric light catch her eye. (*An Unwritten Novel*)

c. Thinking thus, the branch of some tree in front of her became soaked and steeped in her admiration for the people of the house... (*A Haunted House*)

d. Lodging off the Euston Road, there were experiences, again experiences, such as change a face in two years from a pink innocent oval to a face lean, contracted, hostile. (*Mrs Dalloway*)

e. Coming as he did from a respectable Anglo-Indian family which for at least three generations had administered the affairs of a continent..., there were moments when civilisation, even of this sort, seemed dear to him as a personal possession... (*Mrs Dalloway*)

f. Lying awake, the floor creaked... (*Mrs Dalloway*)

g. Lunching with Lady Bruton, it came back to her. (*Mrs Dalloway*)

h. Accustomed to look directly and largely rather than minutely and aslant, it was safe for them to step into the thick of emotions which blind and bewilder an age like our own. (*On Not Knowing Greek*)

i. Rubbing the glass of the long looking-glass and leering sideways at her

swinging figure a sound issued from her lips. (*To the Lighthouse*)

j. Scolding and demonstrating (how to make a bed, how to open a window, with hands that shut and spread like a Frenchwoman's) all had folded itself quietly about her... (*To the Lighthouse*)

k. So boasting of her capacity to surround and protect, there was scarcely a shell of herself left for her to know herself by. (*To the Lighthouse*)

l. Driving past Buckingham Palace last night, there was not a trace of that vast erection which she had thought everlasting... (*Orlando: A Biography*)

m. Looking up into the sky there was nothing but blackness there too. (*Orlando: A Biography*)

n. Eagerly recalling these and other instances of his unfitness for the life of society, an ineffable hope, that all the turbulence of his youth, his clumsiness, his blushes, his long walks, and his love of the country proved that he himself belonged to the sacred race rather than to the noble—was by birth a writer, rather than an aristocrat—possessed him. (*Orlando: A Biography*)

o. Sitting up late at night it seems strange not to have more control. (*The Waves*)

p. Sitting alone, it seems we are spent. (*The Waves*)

q. Swelling, perpetually augmented, there is a vast accumulation of unrecorded matter in my head. (*The Waves*)

r. Lying in a ditch on a stormy day, when it has been raining, then enormous clouds come marching over the sky, tattered clouds, wisps of cloud. (*The Waves*)

s. By applying the standards of the West, by using the violent language that is natural to him, the bullock-cart is righted in less than five minutes. (*The Waves*)

t. Lined with shadows their weight seemed more ponderous, as if colour, tilted, had run to one side. (*The Waves*)

u. Watching him, it seemed as if a fibre, very thin but pure, of the enormous

energy of the world had been thrust into his frail and diminutive body. (*The Death of the Moth*)

None of the danglers in (3) causes a moment's confusion, at least not when placed in context. This writing is not degraded in any way. Woolf is, after all, one of the greatest prose stylists of the twentieth century. Indeed, one can find danglers within the very journal articles that discuss them:

(4) *Prima facie*, when looking for frequencies of prepositional *following*, the quickest and safest method would seem to be to simply go by the number of instances... (Olofsson 2011: 6)

There are many linguistic studies that do recognise that danglers are part of English, and attempt to account for them in their analyses, including Stump (1981: 6f.),[6] Bresnan (1982: 397), Beukema (1985: 195ff.), Kortmann (1991), Williams (1992), Kawasaki (1993: 159-210), Landau (1999: 203-206), Río-Rey (2002: 316ff.), Lyngfelt (2009a: 38f.), Hayase (2011), Haug et al. (2012: 144f.), Duffley & Dion-Girardeau (2015), Fonteyn & Van de Pol (2016: 211), Bouzada-Jabois (2017), and Green (2018: 10ff.). The most thorough of these, Kortmann (1991), supposes that, when faced with a problem of reference, the hearer or reader sets out on an elaborate search-and-match process. Syntax, semantics, and pragmatics are used together in an all-out attempt to salvage the sentence. But this still assumes that all danglers are in need of salvation, and it does not account for why danglers are produced so frequently in the first place or why adjuncts that do not dangle, such as (5), can still cause considerable processing difficulty.

(5) Bill stood up. Walking over to the stage to join the others, Janet pulled out her phone.

My claim in this dissertation that the only way to understand what is going on is to take account of the way we process sentences incrementally. When a hearer or

[6]The COVID-19 pandemic prevented physical access to the library for most of the 6 months leading up to the submission of this dissertation. I apologise to Stump for citing the 1981 dissertation that his 1985 book was based on, and also to Landau for citing the 1999 dissertation that his 2000 book was based on. That was the only way to get the page numbers right.

reader encounters an underspecified initial free adjunct, she does not store it away for later use but rather makes a best guess at the subject given the information she has at that instant. She accomplishes this by using the same mechanism that is employed for processing pronouns. As the rest of the sentence unfolds, she tries to persist with that guess until it no longer becomes possible to do so. The realisation that one is dealing with a dangler does not instigate a search; rather, it undermines and prolongs a process that has already begun.

1.2 The structure of this dissertation

The rest of this dissertation will explore the ways in which this approach can cover most of the observations fueling alternative accounts.

Chapter 2 will examine the structure in question, the free adjunct. I will then situate it against related constructions. This will help me to navigate an otherwise bewildering variety of control patterns. I will then consider the relation between the free adjunct and its matrix clause, and look at Kortmann (1991), which lists the many places that free adjuncts appear to find subjects and gives a set of clues that are said to be used in the search. The key takeaways are (1) that deverbal prepositions involve not just weakened control but no control at all, (2) that apparent event or matrix-clause control is often the result of a different structure, (3) that apparent object control either involves a different structure or is coincidental, (4) that some otherwise similar preposition-headed adjuncts have different structures in their complements (saturated vs unsaturated), (5) that initial position has processing costs but discourse-coherence advantages, and (6) that on processing grounds we should reject the idea of a search for the controller after subject coreference is ruled out.

Chapter 3 provides a brief account of syntactic and semantic theories of control before presenting a set of explanations that have been provided for why some danglers seem to be acceptable. Control is often divided into strictly local control and logophoric control, but there are too many examples of danglers that cannot be explained as controlled by

the perspective-bearer to countenance this. Instead, I will adopt a theory based on a divide between functional and anaphoric[7] control that has its foundations in Bresnan (1982). The chapter then moves to a consideration of the work of two generativist researchers who have dominated the field of control: Hornstein and Landau. Both of these researchers make assumptions that limit their empirical coverage: Hornstein ties adjunct control to Sideward Movement (Nunes 1995), while Landau relies on logophoricity to explain acceptable danglers. I will end with Green (2018), an account that draws close to Kortmann's (1991) various factors influencing control but is undermined by the way it combines the weaknesses of the modern generativist accounts. The key takeaways here are (1) that movement has particular difficulty dealing with the variety of adjuncts needing control and (2) that logophoric control should be subsumed under topical control, even though the opposite approach is more common in the literature.

Chapter 4 will set up and then present my account. First, I will examine the marked difference between how subjective logophoric control is set up and how extrasentential topics are established. I will also consider how anaphoric processing differs from adjunct control with a particular focus on cataphora. This will serve as preparation for an account of the data that takes the incremental unfolding of the sentence into account. I will present this account using Lexical Functional Grammar. It will focus on the interplay of functional and anaphoric control across the major adjunct types under consideration.

Chapter 5 has some ideas for future research. I present a few ways in which my ideas could be supported or falsified through work in psycholinguistics and historical syntax.

There have been other accounts of adjunct control that employ incremental processing, but this dissertation improves on them. The approach in Ido (2001) involves a null pronoun with constantly updated coreference, but the understood subjects of adjuncts are more restricted than pronouns are; the same options are simply not available. The approach in Green (2018, 2019b) supposes that initial adjuncts are resolved logophorically when functional control is not yet available, but logophoric control is available in final

[7]Even when discussing work that does otherwise, I never use the term 'anaphor' in the sense of Chomsky (1981: 101ff.). For me, an anaphor is a word or phrase that is abbreviated and linked to an antecedent either within the text or implied by it (Halliday & Hasan 1976; Huddleston & Pullum 2002). Pronouns like *itself* will be referred to as reflexive.

adjuncts as well, as he notes. I show that it is control by the potentially inanimate topic that is particular to initial adjuncts, which are processed with reference to not just the communicative act but also the previous discourse. Adjuncts can be controlled arbitrarily or logophorically no matter where they are located because these types of control do not require antecedents. This is parallel to what is found with overt egophoric pronouns (Dahl 2000). Topical control is not available when the adjunct is final because of the overwhelming influence of the matrix clause.

Chapter 2

Free adjuncts

2.1 Free adjuncts and the problem of control

2.1.1 What are free adjuncts?

Free adjuncts (FAs) are nonfinite or verbless predicative clauses that have implied subjects and are only loosely attached to their matrix clauses. Because they are loosely attached, they are typically correlated with a break in the prosodic contour of the sentence and hence there is often a comma in the case of written language. They can appear in initial (1a), medial (1b), or final (1c) position relative to their matrix clauses:

(1) a. $_i$Clearing her throat, Tamia$_i$ motioned to the long class conference table. (COCA (2011))[1]

b. Tamia$_i$, $_i$clearing her throat, motioned to the long class conference table. (modified from (a))

c. Tamia$_i$ motioned to the long class conference table, $_i$clearing her throat. (modified from (a))

In this dissertation, we will spend most of our time with the *-ing* variety of free

[1]I have chosen to follow Culicover & Jackendoff (2005) in using subscripts to link the controller with the predicate rather than with a null element such as PRO (this convention is also followed by Lyngfelt (2009b) and Fabricius-Hansen & Haug (2012)). I will eventually reintroduce null subjects in a more limited way. I use this annotation to call attention to coreference, not to indicate that a binding relationship is actually necessary in each case.

adjunct, but there are other nonfinite forms, including *-en* free adjuncts (2) and some *to*-infinitival clauses (3):[2]

(2) $_i$Asked how she felt, she$_i$ refused to comment.

(3) To $_i$restore from a backup, users$_i$ should open the settings dialog.

Verbless free adjuncts instead involve AdjPs (4a), PPs (4b), or NPs (4c). These other FAs are somewhat less semantically flexible in that the eventualities they refer to must hold simultaneously with that of the matrix clause.

(4) a. $_i$Discouraged, Henry$_i$ stared at his bike. (Beverly Cleary (1952) *Henry and Beezus*)

b. $_i$From the town of Bedrock, they're$_i$ a page right out of history. (*The Flintstones* (1960))

c. $_i$A former teacher, she$_i$ was majoring in philosophy at the University of Michigan. (iWeb)

Most studies leave the nonverbal variety aside and limit themselves to nonfinite FAs. Nonverbal FAs, after all, are much less common, accounting for less than 5% of the examples in Kortmann's (1995: 195) corpora, for instance. Nonverbal FAs also have to be distinguished from several other common adjuncts that can display different control patterns. Sometimes this is straightforward: preposition-headed FAs (5a) are fairly easy to keep distinct from non-predicative fronted PP adjuncts (5b):

(5) a. $_i$In trouble with her parents, she$_i$ is grounded.

b. In former times, it was used for shipping.

But other nonverbal adjuncts are trickier. Noun-headed FAs, for instance, can be confused with appositive NPs, which cannot be paraphrased with a verbal FA involving the

[2]I discuss infinitival clauses only rarely, and when I do so I will mostly limit myself to rationale clauses (RatCs), which can optionally be introduced by *in order*:

(i) John bought a sandwich (in order) to eat it.

insertion of *being*. The attachment patterns of appositive NPs overlap with the control patterns of FAs (6a), but only partially (compare the FA in (6b) with the appositive NPs in (6c,d), which find anchors in the object and matrix clause, respectively).

(6) a. Ramona, her sister, likes to repeat television commercials. (ambiguous)
b. A four-year-old, Ramona felt comfortable walking right up to him. (FA)
c. I met Ramona, her sister. (Appositive NP)
d. Ramona said she couldn't unlock the door, an unlikely story. (Appositive NP)

My hands are already more than full with verbal FAs. Nonverbal FAs will still play an important supplementary role in this dissertation: they are part of how I demonstrate that gerunds and participles cannot be treated as one form in PDE. But I cannot provide a full account of their characteristics here.

FAs can express secondary tense, aspect, and voice through auxiliary verbs, and so behave more or less as we would expect non-finite subordinate clauses to behave (Huddleston & Pullum 2002: 1174):

(7) a. $_i$Having made his fortune, Brown$_i$ sold out last year to Heublein Inc., a food and liquor distributor, and went into semi-retirement at 37. (TIME (1972))
b. $_i$Being a Christian, Lord Elgin$_i$ found himself obstructed at every turn. (TIME (1927))
c. $_i$Being ousted, he$_i$ promptly announced himself a candidate against Mr. Cummins this year. (TIME (1926))
d. $_i$Having been exposed to UV radiation for longer, [the uppermost layers of your skin]$_i$ contain more excess melanin than the fresher and less sun-damaged layers beneath. (iWeb)

The semantic relationship of the FA to the matrix clause is often difficult to pin down. A full analysis is worthy of a separate study and cannot be included in this dissertation, but it will be useful for me to be able to separate looser relations from stricter ones. I will adopt a simplified list of possibilities after Killie & Swan's (2009) reduction

of the set found in Kortmann (1991, 1995). I will divide this list into two groups: the looser relations are addition/accompanying circumstance (add/acc) (8a) and exemplification/specification (ex/spec) (8b), while the more integrated ones include temporal (8c) and cause, condition, concession, or contrast (CCCC)[3] relations (8d).

(8) a. $_i$Breathing softly, he$_i$ waited for a response. (add/acc)

b. $_i$Tapping me on the shoulder and $_i$pointing at his wrist, he$_i$ reminded me of the time. (ex/spec)

c. $_i$Arriving home, he$_i$ unlocked the door. (temporal)

d. $_i$Arriving home late, he$_i$ had to wait for the door to be unlocked. (CCCC)

The looser relations (8a,b) require a brief explanation. An add/acc free adjunct like (8a) involves a separate second eventuality that is held side-by-side with that of the matrix with an unspecified relation between them (Kortmann 1991: 168ff.). An ex/spec relation like (8b), on the other hand, uses the adjunct to specify parts of the matrix eventuality or ways in which it is accomplished (Kortmann 1991: 166ff.). And so *breathing softly* was not the way in which waiting for a response was carried out in (8a), but *tapping me on the shoulder* and *pointing at his wrist* did constitute the reminder in (8b).

The more specific relations (temporal (8c) and CCCC (8d)) can be encoded in the prepositions that select *-ing* clauses.

(9) a. **While** $_i$eating his sandwich, he$_i$ thought about the situation.

b. **Although** $_i$concerned about the situation, he$_i$ raised no objections.

c. **Once** $_i$in the street he$_i$ felt a little scared (Margaret Rey and H. A. Rey (1947) *Curious George Takes a Job*)

These are often referred to in the literature as 'augmented free adjuncts' (Stump 1981: 13, Kortmann 1991: 194-199, Fonteyn & Cuyckens 2014: 20f.), but that term is less than ideal. The 'augmentor', after all, is a preposition that selects the rest of the adjunct, not an optional bit that fits on front. And it is the new adjunct headed by the preposition that is now inside or outside the prosodic contour of the matrix. I will instead use the

[3]This is an admittedly heterogeneous group; see Couper-Kuhlen & Kortmann (2000).

terms **bare free adjunct** and **full free adjunct** when I want to refer to the adjuncts underlined in (10) and (11), respectively.

(10) a. $_i$Standing in the doorway, Bob$_i$ waved to us.

b. Bob$_i$ waved to us, $_i$standing in the doorway.

c. The annoyingly shrill alarm suddenly turned off, relieving us all greatly.

(11) a. After $_i$reading the reviews, I$_i$ decided to try Gaynor Minden tights...

b. While $_i$attending law school, Barnes$_i$ received many accolades and honors.

c. The United States$_i$ invariably does the right thing, after $_i$having exhausted every other alternative.

d. Our goal is to $_i$provide safety, quality and performance at an affordable price, while $_i$protecting the environment. (all from iWeb)

I must provide a warning here: this terminology will have to be modified slightly. In section 2.2.3, we will see that (10c) is actually subclausal, and in section 2.2.7, I will argue that (11a,c) involve verbal gerunds, not the unsaturated nonfinite clauses we see in (10a,b) and (11b,d), even though we can find situations in which they 'dangle', too.

As Kortmann (1991: 112) points out, the semantic relation between the clauses is not merely ambiguous with 'bare' FAs: it can be completely indeterminate at times. That is, the hearer must bring his own interpretation to sentences like (12).

(12) The pony$_i$ moved nearer, $_i$shivering with cold (COHA (1895))

Does this involve a causal (CCCC) relation? That is, does the pony move nearer because of the shiver-inducing cold? Or does the pony have another reason for moving nearer, such as seeing food or being called over, in which case the adjunct *shivering with cold* simply depicts a co-occurring event (add/acc)? We do not have any way to resolve this decision without knowing how the speaker perceived the situation.

2.1.2 How we deal with danglers

We saw in the introduction that the implied subjects of FAs usually corefer with the corresponding matrix-clause subjects (13a), but not always (13b). In some cases, this lack of coreference can lead to confusion and even infelicity (13c).

(13) a. $_i$Turning the corner on his motorcycle, he$_i$ saw a church.

b. $_{exp}$Turning the corner on his motorcycle, a church came into view.

c. ?$_{exp/i?}$Turning the corner on his motorcycle, a dog$_{i?}$ bolted out into the road.

Traditional grammars treat sentences like these last two as ungrammatical, a strict view of FA control that is sometimes adopted in linguistic and psycholinguistic studies (recall the partial list on p.2), but these studies must account for the fact that (13b) is not as bad as (13c) is. Danglers that slip by without much notice include deverbal prepositions that seem completely unremarkable because they do not require control (14a) and adjuncts that appear to be controlled by either the speaker/experiencer of the narrative (14b) or the topic (14c). Those last two might be caught by an eagle-eyed prescriptivist, but many people find them acceptable.

(14) a. Barring accidents, they should be back today. (Huddleston & Pullum 2002: 610)

b. $_{exp}$Knowing you, it's gonna be something big. (Movies: *Men of Honor* (2000))

c. And now we introduce our new line of cakes$_i$. $_i$Covered with a thick layer of our legendary milk chocolate and lightly dusted with dark cocoa, there's nothing you can do to resist them.

I will use the terms *logophoric control* and *experiencer control* to discuss examples like (14b), which involve control by the speaker (or the perceiver if the speaker is relating someone else's experiences). A more detailed discussion of logophoric control will come in section 3.2.1. The term *topical control* refers to the way in which initial free adjuncts can be controlled by salient discourse topics as in (14c). This term, again, will be discussed

more thoroughly later in this dissertation. I will eventually argue that topical control subsumes logophoric control, which is its most frequent subtype.

Danglers might be more common when the adjunct is in initial position, but there are many sentence-final instances as well:

(15) An error occurred while trying to deliver this message to the recipient's e-mail address. (iWeb)

In some cases, what look like danglers at first glance might be reinterpreted as fronted out of a subordinate clause, where they would be controlled by the subject of that clause.

(16) After $_{i,j}$watching the video, I_i know [you$_j$ will be proud of your child, our teachers, and our District]. (AMZ)

If this is what is happening in examples like (16), then there should always be ambiguity with initial adjuncts with matrix clauses that are layered: they should have the option of attaching to either the higher or lower clause. But things are not that straightforward. Zwicky (2017a) points out that this ambiguity arises because the present-simple first-person mental-action verb *know* supports two framings: the reportive one in which that state of knowledge is reported as a proposition, and the expressive one in which *I know* functions more as a parenthetical modifier to what seems to be the subordinate clause.[4] The stipulations about the type of verb are important: non-present-simple tense (17a), non-first-person agreement (17b), and non-mental-action verbs (17c) all rule out the ambiguity and allow coreference with the subject of the larger clause only (Zwicky 2017a).

(17) a. After $_{i,*j}$watching the video, I_i knew you$_j$ would be proud. (AMZ)

b. After $_{i,*j}$watching the video, she$_i$ knows you$_j$ will be proud. (modified from (a))

c. After $_{i,*j}$watching the video, I_i state that you$_j$ will be proud. (modified from (a))

Note that these restrictions on interpretation are not present when the adjuncts are final:

[4]Reportive and expressive utterances were first discussed in Kimball's (1970: 83-129) dissertation.

(18) a. I_i knew you_j would be proud after $_{i,j}$watching the video.

b. She_i knows you_j will be proud after $_{i,j}$watching the video.

c. I_i state that you_j will be proud after $_{i,j}$watching the video. (all modified from (17))

Kortmann (1991) indicates that danglers can often be resolved through a search process that is triggered when the subjects of the FA and matrix sentence cannot corefer. This process looks for suitable controllers elsewhere in the matrix clause (19a), extrasententially (19b), or in the salient context (19c,d).

(19) a. $_i$Looking out for a theme, several crossed his_i mind. (Friederich (1978: 241) as cited in Kortmann (1991: 43))

b. [He_i] settled down in his armchair... $_i$Reading the evening paper, a dog started barking. (Kortmann 1991: 46)

c. Knowing Biggs since he left prep school, there could be no doubt that he was the man the police were looking for. (Kortmann 1991: 44)

d. Having received only an elementary education, the simple teachings and colourful rituals held a great appeal. (Stump 1981: 6)

I have misgivings about the usefulness of searching the context in a last-ditch effort to save an ill-formed sentence. Any such search seems more like the conscious process that we all engage in when we are trying to make sense of something that does not quite work out. Some danglers make us all struggle in that way, but others disturb only a few; the rest of us get on with understanding the text in a fairly automatic way without being aware that anything is amiss. The linguistic presence of a suitable coreferent in the matrix clause feels unlikely to be the deciding factor in whether a dangler can be considered acceptable, because in many cases we have a good idea of the understood subject before the matrix clause even arrives.

Instead, I believe FAs are immediately interpreted wherever they are encountered. If the matrix clause has not yet come, there is no need to wait for it to do so; the hearer makes a good guess and runs with it. Once the matrix clause does become available, that

initial guess can be checked against the matrix subject, but this is done later on.

It is often assumed that free adjuncts are either related or unrelated,[5] but this is a description of free adjuncts after they have been understood. If we look at the process of how control is established, there are several possible outcomes. Here, I am not discussing types of control (topical, etc.) but rather the various experiences hearers can have with the resolution of that control. I will refer to adjuncts causing these experiences with three terms: **garden-path adjuncts**, **undercover danglers**, and **howling danglers**.

In the vast majority of cases, the initial guess matches the matrix subject. These are not danglers and are usually unproblematic. However, the initial guess might be superseded by a matrix subject that can replace the guess as a candidate, as in (20). This generally happens when the matrix subject meets the selectional requirements of the free adjunct, and the result is a garden-path effect. While the syntactic structure of the sentence does not have to be revised, explicit pronoun assignments (here, *his*) and subsequent model elaborations do. I indicate this potential reconsideration of reference with $a(\rightarrow b)$, with the parentheses showing the optional nature of the reassignment.

(20) $_a$Al arrived at home. $\underline{_{a(\rightarrow b)}\text{Fishing his keys out of his pocket}}$, Bob$_b$ waved to him from across the street. (garden-path adjunct)

The shifting understanding of the hearer/reader is illustrated through table 2.1 on p.20.[6] This sort of reference switch can happen whenever the matrix subject is a semantically plausible controller of the adjunct.

When the matrix subject is not a potential controller (such as when it is pleonastic), this garden-path effect does not occur and acceptability is improved in most cases. I describe these as 'undercover' danglers, as they are typically processed without difficulty.

[5] Sometimes these terms are code for acceptable and unacceptable.

[6] The tables on p.20 were inspired by OT tableaux, with the particular influence of the representations of incremental pronoun interpretation in de Hoop & Lamers (2006) and de Hoop (2013). This is merely the theft of a convenient notation. I do not want to imply that I have taken on any of the theoretical assumptions of Optimality Theory. More specifically, my factors (syn, sem, etc.) do not constitute a complete ranked set of constraints. But I do not want to reject the comparison completely. For one, the finger should not be understood as having absolute say; the varying interpretations that arise make it clear that certain clues have less impact (if any at all) for some people. The sentences in these tableaux have almost invariably been simplified for space.

(21) Al_a arrived at home. $\underline{{}_a\text{Fishing his keys out of his pocket}}$, it took several seconds for him to realise that the car's handbrake had not been engaged. (undercover dangler; see table (21) on p.20)

It might be argued that the presence of *for him* in the matrix clause provides a suitable coreferent for the implied subject, but that PP can be removed with little effect on the acceptability of the whole. While it is true that potential substitute coreferents are often mentioned within the matrix clause, this is the result of coherence—the free adjunct is semantically related to the matrix clause in some way, and therefore the two clauses often involve the same entities in different acts or situations.

There are also cases that lie between garden-path adjuncts and undercover danglers. These 'howling' danglers have outcomes that are more difficult to predict. In many of these, the attributes of referential matrix subjects partially mismatch the semantic constraints on the free-adjunct subject. For instance, many people who encounter the following sentence will imagine a dexterous canine involved in several actions, as unlikely as that is.

(22) Al_a arrived at home. $\underline{{}_{a(\rightarrow d?)}\text{Fishing his keys out of his pocket}}$, his dog_d jumped up to lick him on the mouth. (howling dangler; see table 2.3 on p.20)

Granted, the correct interpretation of a sentence like this is often made clear in context, but the subject *his dog* exerts a particularly strong pull on the reader here, as one can imagine a dog somehow getting the keys out of a pocket. I have called these howling danglers because they draw attention to themselves. They tend to be overrepresented in collections of dangling modifiers because they are often humorous, confusing, or both. Those that suggest that a nonhuman animal is engaged in a human-only activity seem to be particular favourites. But this overrepresentation can lead to a skewed view of danglers as inherently unacceptable. The more typical dangler, easily processed and understood, is the undercover dangler.

People vary in how sensitive they are to howling danglers. The next sentence evidently escaped an editor to appear in print:

(23) Jennifer Lopez stars as Marisa$_m$, a maid in a fancy New York City hotel. While $_{m(\rightarrow p?)}$trying on a wealthy woman's dress, a handsome and rich politician$_p$ mistakes her for a society woman. (Huddleston & Pullum 2005: 208)

We can recover control in danglers like this once a coherent relation is established through clues later on in the sentence (see table 2.4 on p.20). But if a reader is not particularly sensitive to the subject coreference rule and has committed to understanding Marisa as the dress-wearer, the initial guess might sail through undisturbed (see table 2.5 on p.20).

The recovery can sometimes be motivated less obviously. Take the following sentence from an article about Donald Trump:

(24) ...now many$_m$ would like to turn back the clock to a time, just yesterday, when they$_m$ never imagined this was possible. $_{m(\rightarrow t)}$Having spent the best part of a year $_{m(\rightarrow t)}$treating [his] candidacy as a joke, [Trump]$_{t?}$ has the last laugh. (modified from *The Guardian* 2016-Nov-9 (now corrected); see table 2.6 on p.20)

Here an initial guess at the controller of *having spent*, *many*, is reinforced by its suitability as a controller for *treating* before it is suddenly revised to *he* (i.e., Trump) because that new controller is supported by the subject coreference rule and is also semantically compatible with the adjunct. Once *the last laugh* arrives, however, it becomes clear that the original guess is more likely. Trump and the voting population can both potentially treat his own campaign as a joke, of course, but *he* is the less likely controller.[7] For some readers, the pragmatic return to *many* cannot defeat the relatedness assumption.

These complications (garden-path effects, howling clashes, and recoveries) are not as apparent to the speaker, who is not in the position of having to guess at coreference

[7] In the original text, the intended reading (*many*) is reinforced by choice of referring expression, as the author uses *Trump's* where I have *his*. The disruption is reduced or eliminated in (i) because *he* is discouraged from controlling the adjunct by *Trump's*—if *he* were controller then we would expect any additional coreferring elements in the adjunct to also be pronominal. Principle C might be a tendency rather than a rule, but (ii) is clearly problematic.

(i) Having spent the best part of a year treating Trump's candidacy as a joke, he has the last laugh. (*The Guardian* 2016-Nov-9)

(ii) *He$_i$ treated Trump$_i$'s candidacy as a joke.

	$_i$Fishing his keys out of his pocket,	*Bob waved to him...*
$i =$	☞ Al	Al
		☞ Bob
syn		coref shift
sem		(no clash)

Table 2.1: Garden-path adjunct ((20) on p.17)

	$_i$Fishing his keys out of his pocket,	*it took several seconds for him...*
$i =$	☞ Al	☞ Al
syn		(coref precluded)

Table 2.2: Undercover dangler ((21) on p.18)

	$_i$Fishing his keys out of his pocket,	*his dog jumped up...*
$i =$	☞ Al	Al
		☞ his dog
syn		coref shift
sem		[-human] clash

Table 2.3: Howling dangler ((22) on p.18)

	While $_i$trying on a dress,	*a handsome politician*	*mistakes her for...*
$i =$	☞ Marisa	Marisa	☞ Marisa
		☞ male politician	male politician
syn		coref shift	coref defeated?
sem		gender clash	
prag			coherence

Table 2.4: Howling dangler with recovery ((23) on p.19)

	While $_i$trying on a dress,	*a handsome politician*	*mistakes her for...*
$i =$	☞ Marisa	☞ Marisa	☞ Marisa
		male politician	male politician
syn			
sem			
prag			

Table 2.5: Undetected howling dangler ((23) on p.19)

	$_i$Having spent a year	*$_i$treating it as a joke,*	*Trump has*	*the last laugh*
$i =$	☞ many	☞ many	many	☞ many
			☞ Trump	Trump
syn			coref shift	coref defeated?
sem			(no clash)	(no clash)
prag				knowledge shift

Table 2.6: Howling dangler with recovery ((24) on p.19)

relations. While it is possible for the speaker to predict confusion that her listeners or readers might encounter, this is a skill that normally has to be cultivated. Danglers are not ungrammatical; rather, the adjuncts that cause problems (here, garden-path adjuncts and howling danglers) arise from a lack of consideration for the other person's unfolding understanding of the situation.[8] Language producers who avoid danglers can imagine what it's like for those attempting to understand them.

2.2 Some family relations

Free adjuncts are closely related to other constructions. As we will see, some of these similarities have led researchers to conflate different constructions in their analysis of control, unnecessarily complicating the problem.

Deverbal prepositions do not require control. Sometimes, this is obvious (25a), but at other times a speaker appears to be involved (25b).

(25) a. During the six o'clock news, an alarm went off.

b. Considering the circumstances, we did well.

I will argue that these deverbal prepositions do not involve control in either case, but are rather best understood as sometimes oriented toward a participant in the speech act. This is different from the flexible control we find in dangling free adjuncts.

If we were to take the underlined clause in (26) to be a free adjunct, we would need to account for control by the matrix proposition:

(26) [[Real economic growth]$_i$ is hard to find]$_j$, $*_{i,j}$making it all the more difficult to boost incomes... (iWeb)

The subject cannot control by itself; economic growth would make it easier, not more difficult, to boost incomes. I will argue that (26) actually involves a **predicative participial phrase** that can target the entire matrix clause. It means, roughly, 'the difficulty

[8]The position that danglers are not ungrammatical but simply a minor discourtesy to the reader has been taken by Geoff Pullum since at least 2003-Dec-14 (see Language Log posts, including `http://itre.cis.upenn.edu/~myl/languagelog/archives/000218.html` (Accessed: 2020-Aug-30)).

of finding real economic growth makes it all the more difficult to boost incomes'. The superficial structure of some participial phrases is ambiguous with the structure of bare adjuncts.

We will also consider what I call **fixed predicative conditionals**:

(27) ...check the goods in the virtual shopping basket and, where necessary, make changes. (iWeb)

Again, these seem to be controlled by the entire matrix clause in some cases: the underlined phrase in (27) means, roughly, 'where making changes is necessary'. But this is an oversimplification of the patterns found with these idiosyncratic constructions.

These are very similar to even more specific items that can be referred to as **summative AdjP constructions**. *Even better*, for instance, can set aside the contents of a clause from what came before it (28a), but this ability vanishes with an explicit complement (28b), in which case the adjunct functions as a normal free adjunct.

(28) a. Even $_i$better, [decorate with potted plants and flowers that can continue to grow]$_i$.

b. Even $_i$better than a lawn mower, the chickens$_i$ leave behind fertilizer... (both from iWeb)

When participial phrases have a nominal anchor (29a) or when a predicative complement functions in a complex-transitive clause (29b), the results are difficult to distinguish in superficial structure from **bound adjuncts** (29c), which are the integrated counterparts of free adjuncts. This can create the illusion that bound adjuncts are frequently predicative of the object.

(29) a. Bill was awakened by a dog barking in the backyard.

b. Bill saw it digging in the yard.

c. Bill did his homework sitting on the bench.

Integrated participial complements like the underlined section of (30) are non-arguments that are nevertheless selected.

(30) He spent his whole life saying that.

They sit somewhere between adjuncts and regular complements in terms of integration, and the same is true for their control: semantic properties of the verb can influence controller choice and yet a freer sort of dangling is still available.

Finally, there are subtle differences between full adjuncts that contain participles (31a) and those that contain **verbal gerunds** (31b).

(31) a. He ate while talking.

b. He ate after talking.

These items were once distinct but are now approaching the end of a merger (De Smet 2010). We will examine the few syntactic differences that remain and consider what the distinction between the two means for control.

2.2.1 Adjuncts headed by deverbal prepositions

2.2.1.1 What are deverbal Ps?

Some phrases in English resemble free adjuncts but seem to have little to no predicative quality (Quirk et al. 1985: 667f., 1072f., 1122; Hopper 1991: 30f.; Kortmann & König 1992; Huddleston & Pullum 2002: 610f.). With a few there is a hint of a subject, such as with *considering* in (32), but in (33) *following* could be exchanged for the preposition *after*.

(32) Considering her busy schedule, there is little hope of arranging a meeting.

(33) Following the end of World War II, there was a sudden increase in the natural birth rate... (Wikipedia)

Both sentences here involve **deverbal prepositions**, which do not behave like verbs and are not controlled by overt (or, I will argue, covert) elements. No matter what the matrix subject is, neither adjunct exhibits any hint of dangling. There is no 'correct' version of these sentences involving coreference with a matrix subject: (34a) is not an improvement

over (32), and we tend to understand *considering* as oriented toward the speaker despite the ready availability of *Mary* in (34b). It is possible, of course, that Mary cannot meet anyone because she is going to spend the day thinking about how busy she is, but that is not how the world tends to work.

(34) a. Considering her busy schedule, I see little hope of a meeting
b. Considering how busy she is, Mary probably won't be able to meet anyone today.

The term 'preposition' is perhaps contentious. Kortmann & König (1992), in a cross-linguistic analysis of deverbal prepositions in Germanic and Romance languages, distinguish between deverbal prepositions and deverbal conjunctions by whether the complement is sentential. There is a problem with this decision: it forces us to assign dual classification to some deverbal items. That is, *considering the time* and *considering that we're late* would have to receive separate analyses. I am in agreement with Emonds (1970: 180f.) and Huddleston & Pullum (2002: 599ff.) that categories should not be distinguished solely on the basis of their complements. In fact, that view is nicely supported by the way in which the corresponding verb *consider* is a verb regardless of its complement. If the verb can take both NP (35a) and clause (35b) as complement, why should the deverbal form be categorised differently for the same ability?

(35) a. They considered his progress.
b. They considered that he had made progress.

Throughout this dissertation, I refer to the deverbal items in question as prepositions.

2.2.1.2 Deverbal Ps are not controlled

In this section, I will show that deverbal prepositions are not subject to control. In fact, they cannot be associated with a subject at all. Typical danglers can find a variety of controllers, but deverbal prepositions are more strictly associated with a participant in the speech act. I will argue that this is not syntactic, and so it cannot be handled through

direct relationships with null participants in a speech-act functional projection.

We can see that deverbal prepositions cannot be associated with a subject by attempting to combine them with an explicit subject as a diagnostic. Free adjuncts can combine with a subject as in (36a) and (37a), in which case they are known as **absolute clauses**.[9] But a variant like this is not possible for the deverbal prepositions in (36b) and (37b). If we add explicit subjects to these adjuncts, as is done in (36c) and (37c), neither can still be understood as deverbal. More specifically, only the verbal reading is available in (36c), as our group is now actually considering the circumstances, and the hearer has to struggle to understand (37c) as coherent (e.g., perhaps such behaviour is particularly appalling given the circumstance that I am speaking as a teacher instead of in another capacity).

(36) a. With the three of us considering these reforms more seriously, the protestors felt that victory was in sight.

b. Considering the circumstances, there is no chance of success.

c. With the three of us considering the circumstances, there is no chance of success.

(37) a. With me speaking to the audience for an hour, you all can take a rest.

b. Speaking as a teacher, this sort of behaviour is appalling.

c. ?With me speaking as a teacher, this sort of behaviour is appalling.

Some deverbal prepositions, such as those in (32), (36b), and (37b), have been argued to be controlled by the speaker, or perhaps a group including the speaker (Kortmann 1991: 50; Huddleston & Pullum 2002: 611; Green 2018: 174-176, *inter alia*). In (32), for instance, the speaker does certainly seem to be very involved with the sentence: the speaker's conclusion (here, that a meeting cannot be arranged) arises from that same speaker's consideration of the schedule. There is also an inherent subjectivity on a deeper level than control here: the matrix clause for deverbal *considering* has to be an opinion, not a fact (Hayase 2014b: 126).

[9]There are also differences in which prepositions select free adjuncts and absolute clauses, which is why I have used *with* in these examples; see section 2.2.7 for a discussion of this.

But even deverbal prepositions that maintain some hint of a controller differ from true dangling FAs. That hint of a controller is actually much more rigid than the more flexible control we can find with ordinary free adjuncts. Deverbal prepositions are actually associated only with the speaker or hearer (Landau 2020a). Usually the speaker serves as controller (38a), but in the case of interrogatives (38b), control seems to fall to the hearer:

(38) a. Considering the odds, they did well. (speaker)
b. Considering the odds, did they do well? (hearer)

Of course, even the simple contrast between *It's hot* and *Is it hot?* illustrates the same principle: statements are often about ourselves, while questions are often about the listener. And so it is natural that dangling free adjuncts should be affected as well:

(39) a. $_{exp}$Having a lot of experience, the job was easy. (speaker)
b. $_{exp}$Having a lot of experience, was the job easy? (hearer)

But both free adjuncts in (39) are at least potentially controlled by a third party: in the right context, a mutual acquaintance's success at a job could be under discussion here, particularly in (39a). That is, the experiencer controls the adjunct, and the experiencer in question could be a person not involved in the speech act who nevertheless experienced the job. A prior sentence like *Bill had a great first day* would encourage this reading. There is no such possibility for deverbal *considering* in (38), which is oriented towards a person present for the communicative act (either the speaker or hearer), not a third party. Furthermore, dangling free adjuncts are easily understood as hearer-controlled in more situations than deverbal Ps: (40) is hearer-controlled even with a declarative matrix clause.

(40) After working on Problem Set 1, Problem Set 2 shouldn't take you much time. (Kawasaki 1993: 163)

Similarly, the dangling FAs in (41) both involve questions, and yet the nature of the questions are such that the orientation differs. In (41a), one can imagine a person giving

directions via telephone to a hearer who is navigating an unfamiliar city, while (41b) might involve the navigator checking back with the person providing directions.

(41) a. Having turned the corner, is there a church?

b. Having turned the corner, is there any point in going further?

We can also see interesting patterns when the deverbal Ps are embedded within a reported speech event. These were pointed out by Landau (2020a: 11f.), who also argues in favour of a distinction between those adjuncts that are oriented to the speech act and those that are controlled by NOC.

(42) a. John$_i$ told Mary that, $_i$judging from experience, such offers were very rare.

b. John asked Mary$_i$ whether, $_i$judging from experience, such offers were very rare. (both from Landau (2020a: 11))

The difference between telling and asking is reflected again in the orientation of the deverbal preposition. The patterns in (42) hold as strongly as those in (38). Danglers in the same position again show a more flexible control:

(43) a. John$_j$ told Mary$_m$ that, $_{j<m}$having such experience, this job would be a piece of cake.

b. John$_j$ asked Mary$_m$ whether, $_{j>m}$having such experience, this job would be a piece of cake. (both from Landau (2020a: 11), but with my control judgments)

Landau says that both John and Mary are simply available in (43). I agree, but I think there is still a preference for one controller over the other that is in fact reversed from (42) (as I have indicated with $<$ and $>$): in (43a), Mary is more likely to have the experience (John is reassuring her about her upcoming job), while in (43b), John has the experience (Mary's reassurance is now sought about his future job). This reversal is not necessary: in (44a), the experience now seems to belong to John, while in (44b), it now seems to belong to Mary.

(44) a. John$_j$ told Mary$_m$ that, $_{j>m}$having a lot of experience, the job was a piece of cake.

b. John$_j$ asked Mary$_m$ whether, $_{j<m}$having a lot of experience, the job was a piece of cake. (both modified from Landau (2020a: 11))

This serves only to reinforce Landau's point, which is that the control is very different here from what is found with deverbal prepositions. Free adjuncts have more options open to them for resolving control compared to the orientation involved with deverbal Ps, which is more in line with the orientation of pragmatic speech-act oriented adverbs, such as *honestly*. The one who is honest in (45) patterns exactly with the 'control' of the deverbal prepositions:

(45) a. **Honestly**, it's not a big deal. (speaker = honest)

b. **Honestly**, is it such a big deal? (addressee = honest)

c. John told Mary that **honestly** it wasn't a big deal (John = honest)

d. John asked Mary whether **honestly** it was such a big deal. (Mary = honest)

The embedded adverbs in (45c,d) might strike some readers as slightly odd. It has been claimed an utterance modifier cannot be embedded within a report of the utterance it modifies because it does not contribute to the content of that utterance but rather serves to qualify its performance (Bach 1999: 356ff.). Woods (2014: 219f.), for example, considers sentences with embedded utterance modifiers to be acceptable only with comma intonation, and even then she calls them degraded. Her explanation is that when these modifiers are embedded they appear as quasi-quotations.

Despite being asterisked in much of the literature, embedded speech-act adverbs like *honestly* are widely attested (46). Embedded deverbal prepositions like *considering* seem to be, if anything, better (47).

(46) a. I told him that **honestly** I am not a violin teacher.

b. I've got to tell you that **honestly**, it's not that bad.

c. [You could] tell him that **honestly**, he's probably not going to feel very welcomed. (all from iWeb)

(47) a. When Don tells me that, considering the source material on Deadbeat, he is happy with it...

b. ...the judge told her that, considering her record, he was forced to impose a jail term.

c. ...the blue book does tell us that considering total enrollment citywide against total capacity citywide, the city is short about 22,000 elementary school seats... (all from iWeb)

In any case, Landau's point stands even with without the embedded examples. Deverbal prepositions do not seem to use the same control mechanism that dangling free adjuncts do. What I do not agree with is the explanation that Landau (2020a: 12) provides: he argues that these speech-act modifiers actually involve very strict syntactic control by an 'author/addressee' nominal in the specifier of a speech-act projection. The idea of syntactically encoding discourse participants went dormant along with Generative Semantics, but it has since been revived. In Speas & Tenny (2003), it is argued that the speaker, addressee, and utterance context should be embedded within a phrase projected above the utterance. The hearer moves to an intervening position in interrogatives, which accounts for the orientation flip for words like *honestly* in questions.

This rigid association of clause type with orientation is common to syntactic approaches. Woods (2014), for instance, presents a slightly different take, in which declarative speech-act phrases involve only the speaker and interrogative ones include the addressee. But the orientation of the adverb is resolved in the same way: the hearer is closer to the adverb than the speaker is, and so "the ADDRESSEE always controls the adverb's PRO in interrogative clauses" (Woods 2014: 219).

One problem for syntactic representations of discourse participants like these is that not all speech-act modifiers behave the same. *Speaking*, for instance, seems to be oriented towards the utterer of the previous sentence regardless of the clause to which it is attached. In (48a,b), A brings up food, while in (49a,b), B brings it up. There is no distinction in either case between (a) declarative and (b) interrogative matrices.

(48) a. A: I love prunes. B: Speaking of food, I'm hungry.

b. A: I love prunes. B: Speaking of food, are you hungry?

(49) a. A: What's that? B: A prune... I love prunes. Speaking of food, I'm hungry.

b. A: What's that? B: A prune... I love prunes. Speaking of food, are you hungry?

And deverbal *turning* is oriented towards the speaker of the current sentence regardless of the matrix clause as well.

(50) a. Turning to the next item on our schedule, let's get ready to go outside

b. Turning to the next item on our schedule, are you ready to go outside?

More generally, not all sentences with interrogative form are intended to be answered, and the speech-act oriented adverbs that go with these sentences do not flip:

(51) a. **Honestly**, what the hell is going on?

b. **Frankly**, who gives a damn anyway? (Huddleston & Pullum 2002: 773)

The speaker in (51a) is claiming honesty for herself in her objection to the ongoing state of affairs. Things are even clearer in (51b): answering this question with *Bob* would be almost as infelicitous as answering *Do you have the time?* with *Yes*. That is because (51b) is an indirect speech act that serves as an assertion (Huddleston & Pullum 2002: 773). The orientation of *frankly* picks up on that, not on the syntactic structure of the matrix clause. Some speech-act oriented adverbs can even be ambiguous:

(52) **Briefly**, what are the chances of success? (Huddleston & Pullum 2002: 773)

Huddleston & Pullum (2002: 773) observe that it could be either the question or the answer that is brief here. And so *briefly* could be oriented towards either the speaker or the hearer, respectively. We cannot offload the hard pragmatic work of determining orientation to the declarative/interrogative distinction.

This holds for deverbal prepositions as well; in (53), the person who is taking things into account is the speaker, who wants to make the statement that the speed of playing

is not important.

(53) Considering that, who cares how fast he plays? (WEB)

So it seems that nonsyntactic forces are at work here. Potts (2003: 194-203) provides an account for utterance modifiers that would work better: he specifies that the clauses should be divided not according to clause type but instead according to their illocutionary force.[10]

Many deverbal prepositions are not controlled by speaker or hearer at all. The sentences in (54) seem not to demonstrate any control, although I suppose they could potentially be argued to be controlled by the matrix propositions.

(54) a. He went bankrupt owing to the economic collapse, and she did, too.

b. He went bankrupt following the economic collapse, and she did, too.

Landau, of course, would not consider these to be oriented to the speech act either (presumably, some deverbal Ps would have PRO to their left (as would adverbs like *honestly*), while others, like those in (54), would not). My view is that control does not seem to be involved with either set of deverbal prepositions. Rather, some are aligned to the speech act through a semantic mechanism like the one outlined in Potts, which creates control-like patterns, while others are not.

2.2.1.3 Verbal or deverbal?

We can now turn to the relations between deverbal prepositions and the verbs from which they came. These differences are important to note because they also function as clues that allow the hearer/reader to figure out whether the adjunct in question requires control. As we have seen, a word that has been reanalysed as a deverbal preposition does not necessarily compete with or replace the corresponding verbal free adjunct; many *-ing* words can still be understood in either way (Quirk et al. 1985: 660, Kortmann 1991: 52f.,

[10]His analysis also prevents the embedding of utterance modifiers, and so interpretive rule (3.142) in Potts (2003: 197) might have to be modified to avoid restricting deverbal prepositions to clauses with main clause force. Or, if it turns out my judgments about embedded reports are wrong, this part can be left in.

Fukaya 1997).

But they are often not completely ambiguous. For instance, an adjunct like *over tea* won't be acceptable with *considering* unless there is a physical act of consideration, so it forces the verbal reading, whether that reading dangles (55a) or not (55b).

(55) a. Considering her busy schedule over tea, there seemed to be little hope of arranging a meeting.

b. Considering her busy schedule over tea, she flipped through the pages of her agenda.

Once we interpret the adjunct as referring to someone actually engaged in the act of considering (the only possibility if it takes place while drinking tea), the deverbal reading is no longer available.

The difference between prepositional and verbal readings does not depend on the presence of an incompatible adjunct, however. (56) is also verbal even without an adjunct because the matrix clause no longer involves an opinion.

(56) Considering her busy schedule, she flipped through the pages of her agenda.

That is not to say that truly ambiguous adjuncts do not exist:

(57) a. So it was that, following the advice given him by a wise mother on his first coming up to the capital from his provincial home, he would never let pass either a figure of speech or a proper name that was new to him without an effort to secure the fullest information upon it. (Proust *Swann's Way* (translation revised by D. J. Enright))

b. Following the news about Brexit, Bob became irritated.

The natural verbal reading of (57a) is that Dr Cottard (*he*) made inquiries in accordance with the advice he received, but the prepositional reading, that he made those inquiries after the advice was given, is also possible. Similarly, in (57b) Bob could have become irritated either (i) because he has been paying attention to the news about Brexit over a period of time (the verbal reading), or (ii) in the aftermath of some particular piece of

news relating to Brexit (the prepositional reading).

There are, of course, several deverbal prepositions that are now strongly preferred over their verbal counterparts. For instance, there are relatively few instances of verbal *according* as in (58).

(58) Susan, who had been busy over her cooking, according him scant attention, at his description of the trains suddenly lifted intent eyes... (COHA (1910))

Deverbal prepositions continue to take the same dependents as the original verbs in many cases, but sometimes a given dependent will rule out either the verbal or the prepositional reading. The meaning of the word also changes to varying degrees and there are frequently differences in which adjuncts are allowed within the phrase (Huddleston & Pullum 2002: 610f., Hopper & Traugott 2003 [1993]: 108). For instance, Huddleston & Pullum (2002: 605) address *owing*, whose verbal form takes a direct object (as in (59a)), but whose prepositional form necessarily takes a PP headed by *to* instead and necessarily involves causation.

(59) a. ${}_i$Owing a month's salary (to her wealthy relatives), she$_i$ decided to go home.
b. Owing to her wealthy relatives, she has a large inheritance.

Other items, such as *according*, pattern in much the same way:

(60) a. ${}_i$According a hearing to the plaintiff, he$_i$ took his seat.
b. According to the plaintiff, there are several reasons for that.

The exact preposition that gets selected makes a difference with *speaking*, even when the meanings of the prepositions are fairly similar. When *speaking* selects a PP headed by *of*, both the verbal (61a) and the prepositional (61b) readings are possible, but this is not true when the PP is headed by *about*, in which case only the verbal reading is available (62).

(61) a. ${}_i$Speaking of the acquittal of Captain Preston in his soldiers, tried at Boston in 1770, the author$_i$ says... (COHA (1821))

b. Speaking of spirits, major, are you of the opinion that... (COHA (1826))

(62) a. $_i$Speaking about the unexplored area in the polar regions, Commander Peary$_i$ said that... (COHA (1909))

b. *Speaking about the unexplored area in the polar regions, major, are you of the opinion that... (modified from (a))

There are semantic ways in which one reading can be forced or made more likely. For instance, when *concerning* appears with an NP referring to something that cannot experience emotion (*this question* in (63a)), the hearer will have to adopt the prepositional reading. An NP like *all who watched her* that can refer to the experiencers of an emotion (63b) will allow the hearer to entertain the verbal reading. And an adverb indicating the depth of concern, like *deeply* in (63c), will force the verbal reading. This is not a blanket syntactic ban against adverbs with deverbal prepositions, as they can appear with prepositions in general and some deverbal prepositions in particular, *pace* Hopper & Traugott (2003 [1993]: 108), as in (64).

(63) a. Concerning this question, please see the following sources.

b. $_i$Concerning all who watched her, the magician$_i$ put her hand in the alligator's mouth.

c. $_i$Concerning his supervision team deeply, Bob$_i$ applied for another extension.

(64) a. Directly following the next scene, there will be an intermission of approximately 15 minutes.

b. Turning now to the local news here in Florida, Fort Lauderdale police are seeking help... (TV: *Mission Impossible*)

c. Especially considering that you are so short, your skill at basketball is unexpected. (modified from Hopper & Traugott (2003 [1993]: 108))

Finally, tense (65a) (Hopper 1991: 30f.) and selection by a preposition (65b) can also cause the parser to decide in favour of the verbal reading, even when the complementation pushes in the other direction:

(65) a. Having spoken of that, I'd like to...

b. While speaking of that, I'd like to...

It is not surprising that the heads of participial clauses should undergo deverbalisation. As König & Kortmann (1991: 113) and Kortmann & König (1992: 674) point out, participial clauses look like PPs from the inside (they frequently involve NPs as complements) and they distribute like them as well (as adjuncts or postnominal modifiers).

Some deverbal prepositions, such as *during*, appear to be derived from transitive free adjuncts but are actually derived from intransitive absolutes (see König & Kortmann (1991: 114) and Kortmann & König (1992: 676)). Again, absolutes are, roughly, free adjuncts with an explicit subject (*His lower lip trembling, he walked out the door*). In OE, these subjects could also be found after the verb, but VS became increasingly rare in ME for most verbs (Kortmann & König 1992: 674f.). But for verbs like *during* (another is *ago*), we can still find both SV and VS in ME, as in the following examples taken from Trousdale (2013: 34f.).

(66) a. *þer was Iustes [iij dayes during] with-in þe*
there be-PAST.3S joust.PL [3 day.PL dure-PRES.PART] within DEF
sayntuarie tofore þabbey
sanctuary to.for DEF=abbey
'There were jousts lasting three days within the sanctuary before the abbey'

b. *And [during þe said parlement] þe Duke of Suthfolke was*
and [during DEF said parliament] DEF duke of Suffolk be-PAST.3S
Arested
arrest-PAST.PART
'And during the said parliament, the Duke of Suffolk was arrested'

The bracketed clauses can be paraphrased by the finite adjuncts *while three days lasted* (66a) and *while said parliament lasted* (66b).

Most absolutes with two possibilities eventually settled into either SV (e.g., *ago*) or VS (e.g., *during*).[11] Those absolutes that settled into VS order were reanalysed as taking

[11]For at least one word, *notwithstanding*, both options appear to be still available today, but it is more accurate to say that both options have become available once again. Postpositional *notwithstanding* had nearly vanished before an American revival in the 20th century (Berlage 2009, 2014: 232-237). Some have claimed that SV *notwithstanding* is an adverb (Kortmann & König 1992: 675), but many classify it as an exceptional preposition (Huddleston & Pullum 2002: 631f.). This preposition can appear without complement as well: (*Notwithstanding, the subsurface situation is restless.* (COHA (1960)).

objects because they had become indistinguishable from transitive free adjuncts that became deverbal prepositions in a more straightforward way. This confusion can lead researchers astray. Fukaya (1997: 287), for instance, compares subject-controlled free adjuncts, deverbal prepositions oriented to the speech act like *considering*, and deverbal prepositions like *during*, and claims that the "subject is supplied by the main clause or the speaker in participle clauses but there is no subject interpretation available for the *during* and *notwithstanding* phrases. . . [because] the development of *ing*-suffixed prepositions has been accompanied by the loss of subject interpretation, from the main clause subject, to the speaker and then to zero". But a word like *during* did not lose its subject in the presumably gradual manner of other free adjuncts and did not undergo an intermediate phase of speaker-control; it had a subject until it did not need one any longer because it was instead reanalysed as its internal complement.

Of course, even though these reanalysed items are not derived from free-adjunct sources, some line up with FA equivalents:

(67) a. Failing that, we need to try something else.

b. $_i$Failing her friends, she$_i$ forgot to pick them up.

The separate origin for deverbal *failing* is still apparent in the way that nobody is failing anyone or anything in (67a); rather, something is failing to be the case.

2.2.1.4 Collecting and sorting deverbal Ps

The set of deverbal prepositions does not have many members, but they are in common use. I present here a list with examples. It is based on a joint set of the words in the relevant studies (Huddleston & Pullum 2002; Fukaya 1997; Hayashi 2015, etc.), and captures most (but not all) of the central members. I have excluded deverbal prepositions that no longer share forms with participial verbs (e.g., *ago*), and those that I believe are misclassified as deverbal prepositions (e.g., *wanting*).[12]

[12] *Wanting* is listed in Huddleston & Pullum (2002: 611) even though it invariably dangles in sentences like *Wanting a sheet of paper, it was impossible to take notes.*

(68) **According** to science, the first living things here were single-celled organisms, tiny little white or green blobs of nothing in particular that lived under the water. (Movies: *Fantasia* (1940))

(69) Even **allowing** for exaggeration, Santa Anna must have crossed the Baja in strength. (Movies: *The Alamo* (1960))

(70) **Assuming** that we can rise to the minimal moral level that I mentioned earlier, if we are not confirmed hypocrites in other words, then some consequences follow about other acts of retaliation and preemption, but that's too obvious to talk about, so I will just leave it for you to think about. (Movies: *Noam Chomsky: Distorted Morality* (2003))

(71) **Barring** any change in the weather, the softball game between the 133rd and 4th infantry divisions will resume as scheduled... (Movies: *Good Morning Vietnam* (1987))

(72) **Based** on your pupil dilation, skin temperature and motor functions I calculate an 83% probability that you will not pull the trigger. (Movies: *Terminator 3: Rise of the Machines* (2003))

(73) **Bearing** in mind we're only cruising, it drinks like an Aston should. (Movies: *O.K. Garage* (1998))

(74) **Being** that you're a sick man, I'll tell you what I'll do... (Movies: *The Heat's On* (1943))

(75) **Concerning** your retirement, sir, I want you to know how much I've enjoyed working with you all these years... (Movies: *Police Academy 5* (1988))

(76) **Considering** the amount of damage we've sustained, they must have been destroyed (Movies: *Star Wars: The Empire Strikes Back* (1980))

(77) Not **counting** Randy, there were a dozen male service techs at Olson's. (COCA)

(78) **During** Prohibition we ran molasses into Canada. (Movies: *The Godfather: Part II* (1974))

(79) My dear Uncle Pio, you are the most delightful man in the whole world, my daughter's husband **excepted**. (Movies: *The Bridge of San Luis Rey* (2004))

(80) **Excepting** a sore throat, a fever and a headache, nothing is wrong with me. (Movies: *Pride and Prejudice* (2005))

(81) **Excluding** friends, associates, and the clients that I represent, there are very few people that I'm on a first-name basis with. (TV: *Suits* (2011))

(82) **Failing** that, we're gonna have to repossess your van. (Movies: *Mississippi Masala* (1991))

(83) **Following** the threat against Eliot Ness, it was decided to make an attempt, no matter how dangerous, to anticipate future moves of the Capone mob. (Movies: *The Scarface Mob* (1959))

(84) **Given** your special interest in that area... It would be an experiment. (Movies: *Vincent & Theo* (1990))

(85) **Granted** that he marries Octavia, will he forget Cleopatra? (Movies: *Cleopatra* (1963))

(86) **Including** you, there have been exactly one thousand five hundred and two. (Movies: *Don Juan DeMarco* (1995))

(87) **Judging** from the car, it's an elderly couple. (Movies: *The Big Bounce* (2004))

(88) **Notwithstanding** Ms Richmond's comments, the determination of guilt or innocence does not require the presence of a jury alone. (TV: *Law & Order UK* (2004))

(89) **Owing** to its high speed, it is particularly suitable for banding viruses... (COCA)

(90) **Pending** more evidence, you're deprived of space pay and all privileges. (Movies: *Forbidden Planet* (1956))

(91) Oh, **pertaining** to that raise in salary. Does that start this month? (Movies: *The Mad Genius* (1931))

(92) **Provided** that you immediately seek medical aid, you'll be bound over to keep the peace for the period of one year. (Movies: *I'm All Right Jack* (1959))

(93) **Regarding** your Senate confirmation, it may not be a bad idea for us to have your personal asset liability... (Movies: *The War of the Roses* (1989))

(94) **Respecting** the allegations of disorder, the court held that the questions raised were substantially the same... (SCOTUS (1915))

(95) **Saving** that exception, the rule is universal that... (SCOTUS (1866))

(96) **Seeing** as how you've been so good to me, it's a terrible oversight. (Movies: *Erin Brockovich* (2000))

(97) **Speaking** of hot, here's a little Billy Idol for you (Movies: *Jack Frost* (1998))

(98) **Supposing** that happened, what about the other issues that were on the table? (TV: *The Sopranos* (2004))

(99) **Taking** that into account, there's a possible error in longitude of less than half a degree. (Movies: *Longitude* (2000))

(100) **Touching** this other business, mark you I'll have no opposition (Movies: *A Man for All Seasons* (1966))

(101) **Turning** to community calendar, the Hill Valley Women's Club bake sale will be held tomorrow from 2:00 to 5:00... (Movies: *Back to the Future Part II* (1989))

None of these items requires control by the matrix subject. As we have seen, many seem to be oriented towards a participant in the speech act who does not necessarily appear

in the matrix (e.g., *considering* and *seeing*). Others, however, retain only a glimpse of this orientation (e.g., *according* and *concerning*), but still seem in some way to involve the perspective of the perceiver, whose judgment is reflected in the understood relation between the clauses. Others seem not to involve the speech-act participants at all (e.g., *during* and *failing*).

The degree to which deverbal prepositions feel controlled is not the only way they vary. Kortmann & König (1992: 682-685) point out that they also differ in how restricted their semantics are, for instance, and how much they behave like typical prepositions (e.g., some can be stranded). They arrange the prepositions on a rough cline in which words like *facing* are relatively similar to their verbal forms, while words like *pending* and *during* rate as more prepositional because their verbal forms are no longer used. They also point out that *during* sometimes tolerates stranding:

(102) a. ...this movie was head and shoulders above the mediocre season it was released **during**.

b. For daily backups, select the time of day you want the backup to occur **during**.

c. ...I instead imagine it in a movie soundtrack, and can perfectly picture what sort of scene it would play **during**. (all from iWeb)

Perhaps following up on this last observation, Fukaya (1997) aims to refine the cline. He sets out to test a group of deverbal prepositions on whether they can participate in stranding (103) and pied piping (104) in order to rank them according to their prepositionhood. He does this by counting occurrences in the COBUILD corpus (Fukaya 1997: 287).

(103) a. When will it be held **during**?

b. *When will it be held **following**?

(104) a. **Following** which event did the festival end?

b. ***Considering** which items is the plan feasible?

Other diagnostics (sometimes based on rather shaky data) are proposed by Hayashi (2015) to the same end. Hayashi does point out a semantic motivation for increased change: those deverbal prepositions that can be understood with spatiotemporal meaning (a prototypical characteristic of prepositions) are used in the most preposition-like way. The key problem with these studies is that both Fukaya (1997: 287f.) and Hayashi (2015: 142) seem to appeal rather generally to a gradual process of grammaticalisation as though it were a unitary phenomenon that is simply faster or slower in some instances. While it is true that some deverbal prepositions have diverged from their verbal roots to a greater extent than others, this is not the result of one overarching process that gradually turns verbs into speaker-oriented deverbal prepositions and then into purer prepositions like *during*. We cannot arrange the deverbal prepositions on a line.

Rather, as Kortmann & König (1992) emphasise in their earlier account, the gradual nature of change is just part of the story. Crucially, the deverbal prepositions that are derived from absolute clauses have taken a different path. And when deverbal prepositions have undergone bleaching and are given new syntactic and semantic characteristics, those new usage possibilities can satisfy functional niches in ways that accelerate change drastically.

Of course, no one is proposing that the degree of prepositionhood for each word is a simple function of how much time has elapsed since it first arose. We can see that such a story cannot be true in table 2.7 on p.42, which lists first mentions in the Oxford English Dictionary. The earliest use of prepositions like *saving* can go back as far as ME[13], but the first attested uses of most of our prepositions date from the 16$^{\text{th}}$ and 17$^{\text{th}}$ centuries. Some deverbal prepositions that are clearly speech-act oriented, such as *seeing* and *supposing*, entered the language centuries before deverbal prepositions like *regarding* or *failing*.

This table contains at least one error: deverbal *following* receives a first-mention date of 1947. This preposition was studied by Olofsson (1990, 2011), who found that it was already established by the 1930s but experienced a rapid growth in use in the latter half

[13]This is the period in which free adjuncts emerged in the first place (see section 5.2).

Word	Date	Text
saving	1385	No man myghte gladen Theseus **Sauyng** his olde fader Egeus.
touching	a1387	**Touchynge** þe þridde liknesse [of the world to man's body] [L. *quoad tertium simile*], þat is vertuous worchynge...
seeing	1475	...for y knowe verreily that your myght and wisedome is grete ynough to fulfille a grettir thing, **seing** that [Fr. *veu que*] thei of Greece be of so smale dedis and of no value.
barring	1481-90	...my lady rec. of Gorge Dove vj.^{xx} yardes, **barin** one pese, of lynnen cloth...
supposing	a1513	...before the sayd of Cytie of yorke aboute an hondreth and .xl. yeres **supposynge** the Cytie of London to be begonne in the seconde yere of Brutes reygne.
concerning	1525	And as **concerning** the interception off the lettirs they esteme it, Sir, for a very grevos matir.
according	?1532	For els **accordynge** to an auncyent prouerbe, To longe abode is causer of moch daungere...
respecting	1548	So lyuely Apothegmes, or breue and quycek [*read* quycke] sentences, **respectynge** christyanyte, haue seldom...
excepting	1553	He commaunded the baggage..to be brought together in one place **excepting** only such thinges as were very necessary.
counting	1630	...to serve three moneths within the Land, and forty dayes without, not **counting** the dayes of marching.
allowing	1646	...the weight of the body (**allowing** for the brain) exceeded the waight of the brain...
including	1648	Four servants died, **including** the cook.
excluding	1720	A Court-Marshall..found 'em Guilty of Cowardice, **excluding** Constable.
owing	1744	She has a Navel-rupture, **owing** to the Ignorance of the Man in not applying a proper Bandage.
regarding	1779	The servant was called, and examined **regarding** the import of the answer he had brought...
failing	1810	In default of these, the heritage goes to the son of the..aunt. Or, **failing** him, it passes, etc.
following	1947	The prologue was written by the company **following** an incident...

Table 2.7: Deverbal prepositions with first mentions (Oxford English Dictionary)

of the 20th century. Olofsson (1990: 25) also points out several examples from the Shorter Oxford English Dictionary that predate the OED entry (1914 and 1851), and I have found examples in COHA that predate these in turn, including (105).

(105) Following the slaughters consequent on 'the rising' of 1798, Lord Castlereagh was authorized to make... (COHA (1845))

While there is indication that some deverbal prepositions have been relatively stable since their introduction, the real change may be disguised in some instances. For instance, Mair (2004: 133-137) includes a brief corpus analysis of two deverbal prepositions: *seeing* and *supposing*. Both entered the language early (the OED gives even earlier dates than Mair's), but these early appearances seem not to have had any impact on the frequencies with which the *-ing* forms of *see* and *suppose* are used; these have stayed roughly level since their earliest recorded prepositional uses. Mair argues this indicates that they are as grammaticalised now as they were then: given that *seeing* can now mean (roughly) *because* and *supposing* can now mean (roughly) *if*, one would expect there to be more circumstances in which these words would be used.

The answer may lie in another study. Visconti (2004) also takes up deverbal *supposing*, subjecting its semantics and pragmatics to a close analysis, but she claims that the grammaticalisation of this word continued through to EModE. Although Visconti (2004) and Mair (2004) do not cite one another and appear to have been published in parallel, she provides a possible explanation for some of his concerns. In ME, *suppose* had a range of uses that do not all survive to the present day: 'believe as a fact', 'anticipate, expect', 'suspect, allege, feign, speak deceptively', and 'support, place support under'. Meanwhile, grammaticalisation weakened the meaning of deverbal *suppose* from strong belief to hypothesis, and the judgment source shifted from the matrix subject (i.e., part of the propositional content of the sentence) to the producer of the utterance. It was increasingly used in imperative and interrogative contexts (i.e., in dialogue-like utterances), and eventually could be used as a way of providing a background proposition in the light of which a question should be considered (Visconti 2004: 175). The decrease in verbal uses

might have partially cancelled out the increase in deverbal uses, which could explain why Mair (2004) did not find the increased usage frequencies he expected to see.

2.2.1.5 Deverbal Ps and spoken English

Free adjuncts have always had a literary quality. Outside of fiction, we rarely produce sentences like *Standing in the doorway, he listened* (COHA (2009)). Deverbal prepositions, on the other hand, are very common in informal spoken English. Merriam-Webster's Dictionary of English Usage (1994: 833) identifies *seeing that/as*, for instance, as "chiefly spoken forms for which we have little written evidence" (the OED records deverbal *seeing* being used as early as 1475; see table 2.7). The frequency with which it appears in movie and television scripts is demonstrated in the collection in (106). It is perfectly colloquial.

(106) a. Well, I mean, seeing that we're here, you might as well show me that mysterious, taboo dress of yours. (Movies: *Sleeping with the Fishes* (2013))

b. Hey, it was the least we could do, seeing as how you worked so hard to become indispensable to the company. (Movies: *Shallow Hal* (2001))

c. You ain't half right, Willard, seeing that you ain't the one that's paying. (Movies: *The Tall T* (1957))

d. Seeing as you're intent on breaking my balls, let me ask you a question (Movies: *Good Will Hunting* (1997))

e. Well, it wasn't any secret to me you were staying at the Silver Creek, seeing as how I'm your number-one fan and all. (Movies: *Misery* (1990))

f. Seeing as I'm a fugitive from the law and I cannae walk the fucking streets, you go. (Movies: *Trainspotting* (1996))

g. Seeing as I is here, could me interest you in a quarter of Moroccan black? (Movies: *Ali G Indahouse* (2002))

h. And, uh... seeing as how they were juveniles, they would've had to serve a little soft time... (TV: *Beauty and the Beast* (1987))

i. Seeing as you're giving them away, can I have one? (TV: *Star Trek* (1967))

j. You know, Cassandra, I know this may sound like a silly question seeing as

how we're in bed together and nearly naked. I've just been wondering, is this a romantic date or a business thing? (TV: *Frasier* (1999))

k. Ejection fraction's only 45, but seeing as he presented with both syncope and failure, there's really only one option. (TV: *ER* (2005))

This is probably the sort of *-ing* adjunct that we come across most often outside of books. Any language user dealing with the problem of controlling *-ing* adjuncts has very inconsistent evidence to work with; it would not be surprising if the widespread use of deverbal prepositions functioned to prime a gradual loosening of control relations. In section 5.2, we will see some support for the idea that control relations are indeed becoming less strict over time.

2.2.2 Bound adjuncts

2.2.2.1 A prosodic distinction

Free adjuncts sit outside the prosodic contour of their matrix clause. This gap helps to differentiate them from **bound adjuncts (BAs)**,[14] 'adverbials' like FAs that are instead woven into the matrix. When scope is not involved, the difference between BAs (107a) and FAs (107b,c) can be fairly subtle.

(107) a. John$_i$ steered the ship $_i$singing drunkenly to himself.

b. John$_i$ steered the ship, $_i$singing drunkenly to himself.

c. $_i$Singing drunkenly to himself, John$_i$ steered the ship.

But there are differences that can be drawn out through negation, interrogatives, and modals (Simpson 1983: 412; de Swart 1999: 339f.; Schultze-Berndt & Himmelmann 2004: 68; Himmelmann & Schultze-Berndt 2005: 22, 27; Verstraete 2007: 146). The entire sentence is under scope when the clause is a BA as in (108a), but the prosodic gap

[14]Huddleston & Pullum (2002: 529) call FAs and BAs detached 'supplements' and integrated 'modifiers', while Quirk et al. (1985: 1070ff.) call them 'disjuncts' and 'adjuncts', treating adjective-headed BAs separately as 'supplementive adjunct clauses' (Quirk et al. 1985: 424ff.). I take the term 'bound' from Chafe's 1984 discussion of finite 'adverbial' clauses. It would be a mistake to claim that all adjuncts fall into one or the other category based on punctuation, but we can observe tendencies that cluster around the presence of a gap.

prevents the FA in (108b) from falling within the scope of matrix negation. The initial adjunct in (108c) is also free.[15]

(108) a. John$_i$ didn't steer the ship $_i$singing drunkenly to himself.

b. John$_i$ didn't steer the ship, $_i$singing drunkenly to himself.

c. $_i$Singing drunkenly to himself, John$_i$ didn't steer the ship.

So in (108a) it is the combination of steering and singing that is denied (i.e., John might have steered the ship quietly), while in (108b,c) John didn't steer the ship but did sing drunkenly (and one can infer a causal relationship between the two eventualities). We can see the same pattern with adjective-headed adjuncts:

(109) a. This time my supervisor$_i$ didn't leave $_i$happy with the progress I'd made.

b. This time my supervisor$_i$ didn't leave, $_i$happy with the progress I'd made.

c. $_i$Happy with the progress I'd made, this time my supervisor$_i$ didn't leave.

Similarly, the adjuncts in (110b,c) and (111b,c) are presupposed and outside the scope of the interrogative and the modal, respectively. Their truth is not in question unless the adjunct is stressed in marked way.

(110) a. Did John$_i$ leave after $_i$embarrassing himself again?

b. Did John$_i$ leave, after $_i$embarrassing himself again?

c. After $_i$embarrassing himself again, did John$_i$ leave?

(111) a. John$_i$ must have figured it out after $_i$seeing the note.

b. John$_i$ must have figured it out, after $_i$seeing the note.

c. After $_i$seeing the note, John$_i$ must have figured it out.

2.2.2.2 Complex-transitive clauses

Bare bound adjuncts can be understood as depictive or circumstantial secondary predicates. These usually take subject control (112a), but not always (112b) (Himmelmann

[15]Initial adjuncts can come within the scope of a matrix element in some cases if the adjunct is stressed in a marked way.

& Schultze-Berndt 2005: 19-24; Fabricius-Hansen & Haug 2012: 30-37).

(112) a. John$_i$ ate his hamburger $_i$drunk.

b. John ate his hamburger$_i$ $_i$rare.

If the subject-oriented adjunct in (112a) is fronted, it will be detached and therefore reinterpreted as an FA, while the object-oriented adjunct in (112b) can only be found earlier in highly constrained circumstances (Himmelmann & Schultze-Berndt 2005: 18).

Let's consider object-oriented BAs for a moment to come to a better understanding of what is going on. The ability to be controlled by objects as in (113a) is very different from what we see with FAs, but it is also lexically constrained, which is demonstrated by (113b).

(113) a. He ate the meat$_i$ $_i$raw.

b. ?He ate the banana$_i$ $_i$ripe.

Culicover & Jackendoff (2001) seem to indicate that object-orientation falls out from the predicative phrase alone: they say that the properties of *drunk* are what creates the ambiguity in (114).

(114) Helen$_i$ examined Bernie$_j$ $_{i,j}$drunk. (Culicover & Jackendoff 2001: 503)

To some extent, this is true: an adjective depicting a purely internal state (e.g., *anxious* or *relieved*) would not work here. But the potential for object-control depends in the first place on the selectional properties of the matrix verb. The NP appearing after verbs like *examine* (or *see* or *serve*) is optionally understood as being the target of an enusing predicative complement XP in a complex-transitive clause.[16] This is not available with all verbs (115).

(115) Helen$_i$ approached/approved/fled Bernie$_j$ $_{i,*j}$drunk. (modified from (114))

But the right verbs, of which *examine* is one, can host a variety of phrases, including VPs:

[16]Whether we regard these NP+XP sequences as small-clause constituents or not is not at issue here.

(116) Helen examined/saw Bernie$_j$ $_j$standing on his head. (modified from (114))

There is an additional ambiguity here: in many cases, what appears to be a bound adjunct that is predicative of the object can actually be NP-internal (117a). Of course, this can be ruled out with a pronoun, an intervening phrase, or both (117b,c).

(117) a. John served [the meat dripping with fat]/[the ribs coated with BBQ sauce].

b. John served it$_i$ to them $_i$dripping with fat.

c. John served it$_i$ to them $_i$coated with BBQ sauce.

So if we set NP-internal phrases like (117a) aside until section 2.2.3, we can concentrate on the way in which bare adjuncts appearing within the prosodic contour of the matrix can be understood either as subject-controlled BAs (118) or as predicative VPs in complex clauses (119):

(118) a. They$_i$ served it to us $_i$smiling ear to ear... (WEB)

b. Serve it $_{addressee}$using some coconut cream. (iWeb)

c. Do add unique savour to your pint of beer by serving it $_{addressee}$sitting at this beautiful antique-looking bench. (iWeb)

(119) a. They charge you 15 bucks and serve it$_i$ to you $_i$dripping in grease. (WEB)

b. We serve it$_i$ $_i$sizzling on a heated plate so that it stays hot throughout your meal. (iWeb)

c. I love this dish and it's so easy to serve it$_i$ $_i$looking like it has just come out of a restaurant kitchen! (iWeb)

Most of the time, the correct reading is obvious, but there are uncharitable readings. For instance, (118a) could involve some sort of roasted animal with a face that has been contorted into a smile by the chef, and (119a) could involve greasy waiters. Note that in many of these examples, there is nothing but pragmatic world knowledge to tell us which reading to adopt. That does not mean that the interpretation is uncertain—I do not think anyone has ever interpreted the song "I Saw Her Standing There" as being about the place the singer was standing when he saw the girl.

If the matrix verb is not compatible with complex-transitive clauses (120a) or the adjunct is full (i.e., the clause is selected by a preposition) (120b), object control is ruled out as an option.[17]

(120) a. She$_i$ approved/taught him$_j$ $_{i,*j}$dripping with grease.

b. She$_i$ saw/examined him$_j$ while $_{i,*j}$dripping with grease.

But there's more. If an object-oriented final secondary predicate is sufficiently heavy or focused, it can be located outside the prosodic contour of the matrix clause, giving us what seems to be an object-controlled FA (121a). But again, this is easy to discourage with the wrong matrix verb (121b) or the addition of a preposition (121c).

(121) a. He'd been on the way to his locker when he saw her$_i$, $_i$standing off to the side gazing around wide-eyed at everything; she was obviously new. (iWeb)

b. *He'd been on the way to his locker when he **taught** her$_i$, $_i$standing off to the side gazing around wide-eyed at everything. (modified from (a))

c. *He'd been on the way to his locker when he saw her$_i$, **while** $_i$standing off to the side gazing around wide-eyed at everything. (modified from (a))

Sentences like (121a) are responsible for many apparent object-controlled FAs. The matrix verb is what gives them away.

2.2.2.3 Expectations: free or bound

Full and bare adjuncts differ in how bound they are to the matrix clause by default. Full adjuncts (i.e., those beginning with a preposition like *while*) are typically bound and worked into the clause, and so they fall within the scope of matrix elements when they

[17]I must provide a quick caveat. For me, sentences like (i) involve full BAs that cannot take object control. There is occasional evidence that some people can understand full BAs as the predicative complement in a complex-transitive clause, but this is vanishingly rare. I find (ii) unacceptable as it is coindexed, and the subject reading is impossible because you cannot romp about a property while remaining on the terrace. Nevertheless, it is attested and so I reproduce it here.

(i) The kids$_i$ would stand at the window and watch them while $_i$drinking hot cocoa. (iWeb)

(ii) ?At the rear of the holiday home there is a beautiful sunny terrace where you can watch the children$_i$ while $_i$playing or $_i$romping about at the property. (WEB)

are in final position as in (122a). When in initial position, these full adjuncts are outside the scope of negation (122b) and accordingly are full FAs. Final full adjuncts are often marked when outside the prosodic contour of the matrix. In (122c), we need the help of *even* to make it clear that the adjunct is free and should not fall within the scope of negation.

(122) a. Bill didn't eat a hot dog while walking home.
b. While walking home, Bill didn't eat a hot dog.
c. Bill didn't eat a hot dog, *(even) while walking home.

Bare adjuncts are the opposite: they are usually free even when final (123b). In the presence of negation, the bound reading is often only available when the adjunct's verb is given prosodic stress (123c).

(123) a. Knowing that his friend was a hypochondriac, Bill didn't shake her hand.
b. Bill didn't shake his friend's hand, knowing that she was a hypochondriac.
c. Bill didn't shake his friend's hand *knowing* that she was a hypochondriac; it was an accident that he regretted.

Of course, many bare BAs, like the one in (107a), can indicate manner in an unmarked way. These bare BAs typically fall under the subject coreference rule, but it is certainly possible for the speaker or experiencer to control as well, as in (124).

(124) The board can get very excited about building, and there's a lot of energy around it. That was certainly true moving into this building. (COHA (2007))

What seems to be impossible is control of a final BA, bare or full, by an inanimate extrasentential topic. This might lead us to believe that inanimate control by an established topic cannot work with adjuncts that are attached low, within the VP, but the same seems to be true for FAs in final position as well. That is, control by an inanimate extrasentential topic is reserved for FAs in initial position, not FAs in general. We will return to this topic in section 3.2.

2.2.3 Predicative participial phrases

2.2.3.1 NP-internal

It can occasionally seem as though a bare BA is controlled by the object of a matrix clause without the involvement of a complex clause structure. Compare the following sentences.

(125) a. [She$_i$ was] snuggling a sloth$_j$ $_{i,j}$wearing only a bikini bottom.

b. [She$_i$ was] snuggling a sloth$_j$ while $_i$wearing only a bikini bottom.

c. [She$_i$ was] snuggling a sloth$_j$ who$_j$ was wearing only a bikini bottom. (all modified from the Sydney Morning Herald (2014))[18]

I think that (125a) was probably intended to be a regular subject-controlled bare BA with the same reading as the full BA in (125b), but it is easily understood as indicating that the sloth was the one wearing only the bikini bottom. But that does not mean that object control is at work here. Instead, another structure is involved: (125a) could also be understood to involve a **predicative participial phrase (PPP)** that is semantically parallel to the relative clause in (125c).

PPPs can be distinguished from BAs and FAs by the fact that they can never be 'full' (i.e., they can never appear after a preposition): in (125b), only the subject-control reading is available because the PPP reading is ruled out by *while*. When the subject-control reading does not work for semantic or pragmatic reasons, the processor cannot simply switch to an object-control reading:

(126) I found a pen$_i$ (*while) $_i$discarded by its previous owner.

This sentence only works without the preposition because only the PPP allows *discarded* to be understood with reference to *pen*.

The semantic parallel between (125a) and (125c) has led many researchers to refer to these PPPs as reduced relative clauses (RRCs) (see, for instance, Sag (1997: 471ff.)). The same parallel holds for other post-nominal modifiers as well, such as AdjPs (127),

[18]It is a little odd to have *who* coreferential with *a sloth*, but I use this relative pronoun to show that it is the relative clause itself that rules out coreference with *she*, not the form of the pronoun.

and PPs (128):

(127) a. a manner likely to cause injury
b. a manner which is likely to cause injury

(128) a. the sign on the lawn
b. the sign which is on the lawn

Is this semantic similarity necessarily reflected in the structure in each of these cases? Do we have to interpret the 'reduced' versions as clausal? My answer to both questions is negative: so-called RRCs are better seen as predicative phrases whose interaction with the controller arises from their heads (Huddleston & Pullum 2002; Culicover 2011; Arnold & Godard 2020).

Let's take a look at a few of the differences. Normal relatives can relativise NPs with nearly any function, but 'RRCs' involve the subject, not the object (129) or the complement of a preposition (130).

(129) a. *the sloth John finding
b. the sloth that John found

(130) a. *the sloth John putting a bikini bottom on
b. the sloth that John put a bikini bottom on

'RRCs' do not involve overt relative pronouns, of course—that is part of the reason they are described as reduced. But they also cannot appear with the subordinator *that*.

(131) a. *the sloth that wearing a bikini bottom
b. the sloth that is wearing a bikini bottom

And as can be seen in (132) and (133), predicative phrases also lack a full set of auxiliary verbs that appear with both relative clauses (b) and free adjuncts (c).

(132) a. *She snuggled [the sloth having worn a bikini bottom].
b. She snuggled [the sloth that has worn a bikini bottom].

c. Having worn a bikini bottom once, the sloth was not keen to do it again.

(133) a. *She snuggled [the sloth having been photographed].

b. She snuggled [the sloth that has been photographed].

c. Having been photographed, the sloth was returned to the zoo.

So reduced relative clauses are not reduced, nor relative, nor clausal. Culicover (2011), Huddleston & Pullum (2002), and Arnold & Godard (2020) all agree on the first two parts of this (i.e., that they have not been reduced from relatives but rather have a different structure),[19] but are divided on their status as clauses: Culicover (2011: 5) calls them predicates, Huddleston & Pullum (2002: 446, 1264f.) call them non-finite clauses functioning as post-head modifiers, and Arnold & Godard (2020) remain agnostic on the point.

Of course, the above observations are not news to proponents of RRCs. For example, missing elements are accounted for in chapter 8 of Kayne (1994) through the properties of an unrealised C^0. In the end, Kayne argues that even simple prenominal adjectives project a full clause that the modified noun moves into. Whether this is the correct approach or not will, of course, not be resolved here, but even if you regard PPPs as RRCs, the upcoming discussion is still relevant.

2.2.3.2 Supplements to clauses

Some *-ing* phrases can sometimes be found as summative supplements to matrix clauses (134a). These, again, are in parallel with relative clauses (134b), as was noted by Kortmann (1991: 72-74).

(134) a. My sister's squirt gun shot farther and straighter than mine, annoying me to no end.

b. My sister's squirt gun shot farther and straighter than mine, which annoyed me to no end.

[19] Culicover (2011: 11) still calls them relative, but under a definition of relatives as expressions of the form $\lambda x.F(x)$ (i.e., as predicative).

The sentences in (134) are equivalent in the way (a) and (c) were in (125). Summative *which*-relative clauses start with the information in the matrix and provide new information that is equal in importance and not backgrounded (Huddleston & Pullum 2002: 1147f.); summative participial phrases do the same.

Sentences like (134a) have occasionally been noted in the literature, but they are explained as involving free adjuncts controlled by the matrix event or proposition (Quirk et al. 1985: 1122; Kortmann 1991: 8f., 61; Behrens 1998: 93-149; Duffley 2014: 187; Duffley & Dion-Girardeau 2015: 233; Fischer & Høyem 2019). I will argue that these are instead best analysed as subclausal PPPs, in accordance with my earlier argument against an RRC analysis for those that are attested within NPs. Again, the most important part of this claim is that the underlined phrases in (134a) and *the man eating the sandwich* involve the same sort of structure with different predicands. For those who believe in RRCs, the underlined phrase in (134a) should count as one, too.

As before, the summative reading vanishes in the complement of a preposition like *while* or *before*: in (135a,b), the squirt gun did something else to annoy the speaker (whether subsequently or simultaneously). This option is open to (135c) (and is forced by the instrumental PP *with an irritating electric siren*), but it is not forced in the same way as it is with (135a,b), which cannot be summative even without the instrumental PP.

(135) a. My sister's squirt gun shot farther and straighter, before annoying me to no end (with an irritating electric siren).

b. My sister's squirt gun shot farther and straighter, while annoying me to no end (with an irritating electric siren).

c. My sister's squirt gun shot farther and straighter, annoying me to no end (with an irritating electric siren)

Furthermore, the summative reading is only available when there is no indication of a fuller clausal structure that would rule out PPPs. The underlined supplement in (136), for instance, cannot be understood as caused by the matrix proposition; it is an ordinary

free adjunct.

(136) ...I changed the direction of the stitches, having made them curvy... (iWeb)

There are other aspects of summative PPPs that seem to suggest that I am right to reject a relative analysis, but these must be taken with caution. Relatives are usually thought to come after their anchor. But when the adjuncts in (134) are fronted, the sentences change in different ways: (137a) is completely unacceptable (as is (138a)), but (137b) is better and (138b) is completely fine.

(137) a. *Which annoyed me to no end, my sister's squirt gun shot farther and straighter.

b. ?Annoying me to no end, my sister's squirt gun shot farther and straighter.

(138) a. *Which made the problem worse, qualified nursing instructors were very hard to find. (modified from (b))

b. Making the problem worse, qualified nursing instructors were very hard to find. (iWeb)

The distributional facts of summative *which*-relatives, however, are more nuanced than I have suggested. These relatives can be found in initial position if they occur after a coordinator (139) (Huddleston & Pullum 2002: 1066; Lee-Goldman 2012: 579).

(139) a. There was a lack of hospital beds and, which made the problem worse, qualified nursing instructors were very hard to find.

b. ...the origin of all false science and imposture is in the desire to accept false causes rather than none; or, which is the same thing, in the unwillingness to acknowledge our own ignorance. (iWeb)

c. The poor too wept, and, which is of much more worth, and much more fruitful, washed away his transgressions with their tears. (iWeb)

d. Or, which I find more likely, in our ignorance, we did get results resembling the real thing... (COCA)

This may be too restrictive—the important part seems to be that the *which*-relative clause cannot be the initial element in the clause:

(140) a. Even if, which I do not believe to be the case, Mr Blythe's extended barge shifting did take an hour... (WEB)

b. Even if (which I must deny) it could be proved that the average man is more likely to feel God near *with* the belief in the Incarnation than without it, I cannot see that this would be any rigid proof of the Incarnation's truth. (Montefiore (1900) Review: Prof. Dalman on Christianity and Judaism)

But the irrelevance of position is made clear by the fact that appositive fused relatives are in initial position in almost all cases and do not necessarily follow a coordinator (142) (Lee-Goldman 2012: 579f.).

(141) a. What is even better, all glasses in this range are free with a voucher. (modified from iWeb)

b. What is worse, we are absolutely unprepared. (iWeb)

c. What is even cooler, the app uses augmented reality to show you the events... (iWeb)

Now, the fused relatives in (141) are far from fully productive. One of them, *what's more*, has become a construction of its own and is distributed even more freely as a speaker comment (Brinton 2009: 203-211; Lee-Goldman 2012: 580). But *what*-relatives still undermine any argument that relative clauses cannot be adjoined to the left.

Hearers need to be able to disambiguate summative PPPs from nonsummative FAs. Kortmann (1991: 61) says that the summative reading has to arise from world knowledge, but Behrens (1998) observes that this reading appears to be connected with causative verbs in the adjunct. There are two basic types of verbs involved: those that express the caused event, like *bury* in (142a), and those whose meaning is limited to the causation itself, like *cause* in (142b).

(142) a. The volcano erupted, burying the city in ashes.

b. The rats spread out, causing the tourists to shrink away. (both from Behrens (1998: 93))

Either way, the causing event (here, the eruption of the volcano or the spreading out of the rats) is what controls or saturates the underlined phrase. The causative verbs allow but do not force the adjuncts to be summative; causative verbs can occur in non-summative adjuncts, too:

(143) a. . . . a lahar$_i$ can flow for great distances, $_i$burying everything it encounters.

b. They$_i$ have become a nightmare in parts of Australia, $_i$causing accidents as they get squashed on roads. . . (both from iWeb)

Aside from overt reasons to rule out the PPP (e.g., *while*, fuller clauses), the choice between the PPP and free-adjunct readings can be made with other syntactic clues. In (144), the free adjunct reading is ruled out because *you* cannot be bound by the understood subject (Principle B), so only the PPP reading is available:

(144) You collected 50 Stamp Patches, earning you some new stamps! (*Yoshi's Woolly World* (2015))

But in (145), there is no syntactic reason to choose one over the other at all. In this case, pragmatics can take over, which is how Kortmann's world knowledge becomes important.

(145) He tightened the cinches over the saddle blanket. . . comforting the animal (with easy words). (modified from Behrens (1998: 108))

What makes it clear that this adjunct is not summative, Behrens (1998: 108) observes, is the instrumental PP *with easy words*. This shows that, if I am right about the two structures involved, the choice between phrase and clause can be made very late and can involve pragmatic consideration of material within the structure itself.

It should also be noted that summative PPPs do not simply select the clause they are attached to but rather interact with ellipsis in ways that support the MAX-QUD analysis for short answers found in Ginzburg & Sag (2000), something that was noted

by Arnold & Borsley (2008) for summative which-relatives. In (146a), the surprising thing is not that you should say nothing, but that Jo thinks you should say nothing: the declarative fragment is combined with the MAX-QUD 'Jo thought X'. This reading is available alongside simple matrix clause attachment (146b).

(146) a. A: What did Jo think?
B: You should say nothing, which is surprising. (Arnold & Borsley 2008: 326)

b. A: What did Jo think?
B: That you should say nothing, which is what I think, too. (Arnold & Borsley 2008: 335)

We can see that summative PPPs can target both the MAX-QUD (147a) and the matrix clause (147b) in a similar way:

(147) a. A: What did Jo say?
B: The Jumblies went to sea in a sieve, making her the second person to say that.

b. A: What did Jo say?
B: The Jumblies went to sea in a sieve, making everyone say they would all be drowned.

There is evidence that there is still more to the story than this. Duffley provides an example that is both unusual and unnoticeable:

(148) The form of the Thames barge evolved in the early nineteenth century, replacing an earlier more primitive kind of sailing vessel. (Duffley 2014: 189)

This does not target the matrix clause or the original form of the Thames barge, but rather the new form of the barge that is evoked by the matrix clause.

We can occasionally find participles heading phrases that apparently have more clausal structure, but this is not the norm. The examples in (149) are quite stiff, but not ungrammatical.

(149) a. A contract authority shall invite [all persons having been admitted to the category. . .]

b. It can be a safe option to provide links (to) the licenses to access [the materials having been purchased].

c. By adult persons we understand [all persons having reached or passed the age of 18 years]. (all from iWeb)

But these fuller structures can never be summative, as we saw in (136) (*I changed the direction of the stitches, having made them curvy*). It is not clear whether this restriction arises from syntax or semantics: *having made them curvy* cannot be temporally anterior to the matrix event while also being caused by that very event.

As was the case with bound adjuncts, PPPs can appear with comma intonation, making them very hard to distinguish from final bare FAs except in the fact that they appear to be controlled by the object (150a). These too are only really acceptable when heavy or focused (compare (150a) with (150b,c)).

(150) a. . . . he whiffled his way out into the rain, searching in earnest along the black asphalt$_i$, $_i$painted with diagonal white lines that marked the parking spaces. (Beverly Cleary (1964) *Ribsy*)

b. ?. . . he searched along the black asphalt, [$_i$painted and $_i$wet]. (modified from (a))

c. ??. . . he searched along the black asphalt, $_i$painted. (modified from (a))

2.2.4 Fixed predicative conditionals

We must next distinguish what I will call **fixed predicative conditionals (FPCs)**:

(151) a. When necessary, students are referred to other local physicians. . .

b. If possible, use Class A roofing material. (both from iWeb)

The FPC is a very specific construction that also appears to involve control by the matrix event. This similarity aside, PPPs and FPCs are clearly very different in structure: the

former are necessarily bare, while the latter are not. Kortmann (1991: 56) notices this construction and provides a very constrained description of its potential content: one of *if*, *when(ever)*, or *where(ver)* followed by one of two adjectives (*possible* or *necessary*). This description is too narrow. FPCs can also be headed more marginally by *once* or *unless*, which also encode conditionality, and compatible complements also include *desired*, *feasible*, *required*, *needed*, *requested*, and *appropriate* (Quirk et al. 1985: 1005, 1086, 1090; Huddleston & Pullum 2002: 757, 1076, 1267).

(152) a. Whenever required, we will step in.
b. Where needed, we work closely with specialists to augment our own efforts...
c. Once requested, we will actually hire someone...
d. Wherever appropriate, practitioners should work together with professionals from other agencies... (all from iWeb)

Control for FPCs is unpredictable. Many FPCs are controlled by what follows (153a), but negation can result in the FPC switching to control by the previous proposition (153b) (as always, matrix-subject control is available (153c)). But *even*, when it is available, seems to switch negative FPCs back to idiosyncratic control (153d). Control by the previous proposition (whether whole or in part) (153e), or a salient discussion topic (153f) seems to be the default for *if true*, regardless of negation (153g).

(153) a. If absolutely necessary, they will join the fight. (iWeb)
b. Book a cabin at the posted fare and the Coral Discoverer will attempt to match you with another solo traveler of the same gender. If not possible, enjoy the sole use of the cabin at the twin share price. (iWeb)
c. If not $_i$requested, this hearing$_i$ will not be held. (iWeb)
d. Actually, even if not necessary, we'll prepare a transcript of tonight's testimony. (WEB)
e. [The] local parts store told me there are two pieces to this unit... If true, how do I know which one to replace? (iWeb)

f. Rep. Carlos Curbelo, R-Fla., who represents a South Florida swing district, commented on reports that Comey learned about his dismissal from television news reports that were airing while he addressed FBI personnel at a Los Angeles field office. "No one should find out via the television that they've been fired. If true, that's poor form and plain unprofessional," Curbelo tweeted Tuesday night. (iWeb)

g. All of these men were taken off Alcatraz in straitjackets and placed in institutions. Is that correct? ... If not true, the witness ought to have the opportunity to say so. (Movies: *Murder in the First* (1995))

FPC control is often characterised as control by the proposition expressed by the entire matrix clause (Kortmann 1991: 56; Biber et al. 1999: 829f.). However, the clause is only partially targeted in some instances. In (154), for instance, what is necessary is the provision of medical treatment, not the subject (acute cholecystitis, which is the thing to be treated) or the clause (acute cholecystitis sometimes being successfully treated).

(154) ... when necessary, it can sometimes be successfully treated medicinally. (WEB)

The construction under discussion is much more flexible in its distribution as a parenthetical than summative PPPs or even normal FAs, and in cases like (155c-f) it can pick out parts of the sentence to qualify:

(155) a. ... the damaged goods will, if necessary, be replaced and claims will be submitted to the relevant transport insurance company. (WEB)

b. ... and the consumption of the transactions contemplated hereby have been, if necessary, duly and validly authorized by the appropriate governing body... (WEB)

c. ... immediately report to a local medical facility for COVID-19 testing and if necessary treatment and quarantine. (WEB)

d. ... identifying the phrasal units and the lexical units (and intermediate units if necessary) which can be associated to the symbols of that formal grammar. (Marrafa and Saint-Dizier (1991))

e. . . . present your documented case to their supervisors and, if necessary, to local government officials. (iWeb)

f. The constituent occupying [Sec,init] must be taken to denote a causing event, by coercion if necessary, while the result phrase denotes the result state. (Truswell 2007b: 197)

Kortmann (1991: 56) claims that control by the matrix subject is never available with FPCs, but standard FA control can still operate in at least some cases. Usually, this is less than clear: in (156a), nothing in particular hinges on whether it is the police or contacting the police that might be necessary. But in (156b), it is the equipment, not the availability of equipment, that is necessary. A similar interpretation holds for (156c).

(156) a. . . . when necessary, police are called.

b. If necessary, other equipment is available.

c. If possible, a commit from right then and there would be great. . . . (all from iWeb)

We can illustrate the simultaneous availability of both readings with invented examples like (157), which involves real ambiguity.

(157) We tried to undermine our competition's efforts by disposing of essential information they needed. We went through each document we were hosting online. Whenever necessary, the document was erased.

Each document was erased either (i) when that erasure was necessary or (marginally) (ii) when the document itself was found to be necessary to the competition.

The FPC is a highly specific construction. The head and the complement are lexically constrained. An adjunct in which a preposition like *although* selects *possible* or *necessary*, for instance, will involve standard control:

(158) a. Although $_i$possible, this$_i$ is highly unlikely. (subject)

b. Although possible, I wouldn't focus on it. (dangler)

c. Although $_i$necessary for life, water$_i$ cannot produce living creatures on its

own. (modified from Web) (subject)

d. Although necessary, it is best to do it as sparingly as possible. (dangler)

Similarly, changing the complement to, for instance, *successful* or *approved* will result in standard control patterns as well:

(159) a. If $_i$successful, you$_i$ will receive a conditional offer letter. (subject)

b. Once $_i$registered, they$_i$ will be able to bid on suitable properties and, if $_i$successful, the tenancy would be held by Children's Services... (subject and dangler, respectively; *successful* might be controlled by the applicants or by the bidding event)

c. Such an application$_i$, if $_i$approved, would form an amendment to the original planning permission... (subject)

d. When approved by an authority, it is expected that the premises are made available. (dangler) (all WEB)

In some cases they can involve relevance protases (or 'biscuit conditionals') (Austin 1956; Huddleston & Pullum 2002: 740). In these, the condition does not specify when the proposition is true, but rather when the conditions are met for the production of the speech act.

(160) If necessary, there are special mouthguards that can be worn with braces. (iWeb)

The necessity of mouthguards that work with braces does not have any impact on their existence, but it does have an impact on whether the speaker is justified in announcing their existence to the hearer.

But many FPCs are not metatextual hedges like that; they involve real causes and effects. In (161), the truth of the proposition does depend on satisfying the condition in the adjunct just as much in (b) as in (a).

(161) a. If you drink from that bottle, you will shrink.

b. If necessary, I will go.

If it ends up not being necessary for the speaker of (161b) to go, presumably she will not follow through.

To my knowledge, this construction has received very little attention outside of the major English grammars. Rogalska (2015) provides a brief corpus-based summary of what she describes as elliptical *when*-clauses, but she primarily focuses on those that are controlled by the matrix subject, and does not consider other control properties in any detail. She follows Quirk in saying that the construction can point to the matrix clause in some cases without specifying which circumstances were involved (Rogalska 2015: 319). She also deems the relevant adjectives to be grammatical when bare (Rogalska 2015: 319), but this is not the case for any of the items involving clause control, which constitutes additional evidence that the FPC is a specific construction that should not be treated together with other types of adjunct control:

(162) a. *(If) necessary, the wound should be purified by washing with saline solution...

b. *(When) feasible, remove all of your makeup before sleep. (both from iWeb)

The best characterisation of FPCs seems to be that they are identical to the equivalent finite conditional clauses with *it BE*, just as PPPs were equivalent to finite relative clauses. They cannot, however, be understood to involve the same sort of predicative analysis that we claimed was appropriate for PPPs.

This seems to be also true of other conditional adjuncts. The following sentences are unexpectedly acceptable with object-control readings, and they can be paraphrased by adding *it is*.

(163) a. Rats eat meat$_i$ if/when/*while $_i$available.

b. Of course, any user signing up will automatically get the newest version$_i$ if/when/*while $_i$available.

c. We will provide further information$_i$ if/when/*while $_i$available.

d. [You could use a formula] to return the related information$_i$ if/when/*while $_i$found.

e. The reports shall contain the following information$_i$, if/when/*while $_i$known. (modified from WEB)

f. We may collect the following information$_i$, if/when/*while $_i$provided on your contact form) (modified from WEB)

g. The location data is used solely to provide location-based information$_i$ to you, if/when/*while $_i$available. (modified from WEB)

There is more evidence in favour of this correspondence. In some cases the missing *it is* seems to be, at least potentially, the result of right dislocation (Bäcklund 1984: 102), which further underlines the idiomaticity of this construction. I find these ungrammatical, personally, but they are widely attested.

(164) a. If possible to get close to the trees the open viewing area is somewhat larger.

b. When necessary to protect the public health, safety, or welfare, the Board shall require any evidence necessary to establish the continuing competency of engineers and land surveyors as a condition of renewal of licenses.

c. When possible to go south across the rocks, do so and break the wall at the end.

d. Whenever necessary to provide safety and security for the members and staff, or upon the written request of eleven (11) members, the Speaker shall direct the Clerk to clear the fifth floor halls and offices of the State House of all unauthorized persons. (all from iWeb)

While the conditional adjunct in (164d) on its own could possibly be interpreted as controlled by the matrix event, the coordinated adjunct (*upon the written request of eleven (11) members*) rules this out.

It should be noted that when *while* is understood conditionally, it appears (marginally) to involve the same sort of *it BE* equivalence. This is rare, but attested:

(165) a. Stay close to her while necessary.

b. Continue with soft foods while necessary. (both from iWeb)

One final illustration of the equivalence is provided by the control patterns found with an unusual head, *unless*. At first, its control patterns appear normal (though it does not seem to occur with predicative NPs), and it can dangle as well (166e).

(166) a. Unless $_i$applying for particular types of work (see below), [a person who has spent cautions]$_i$ does not have to disclose them to prospective employers (iWeb)

b. Unless $_i$renewed, a financing statement$_i$ will automatically expire five years after it was first registered. (iWeb)

c. Unless $_i$rabid, patients$_i$ are far easier to deal with than clients. (iWeb)

d. Unless $_i$at the foot of their dam, [all animals being exported]$_i$ must be at least 6 months of age and fully weaned at least 1 month before shipping. (iWeb)

e. Unless $_{exp}$sitting over the customer's shoulder watching their screen, it's difficult to get visual validation from them.

But *unless* can also be found, if somewhat marginally, in FPCs with a lexical item like *necessary* (Huddleston & Pullum 2002: 1267). But instead of control by the matrix clause or some element of it, these adjuncts seem to involve control (in a very loose sense of the word) by a situation contrasting with what is described in the matrix clause, which should itself involve a non-affirmative context (167) (compare the unacceptable sentences in (168)). As always, these are the same patterns we would see if we inserted *it BE*.

(167) a. Unless necessary, none should depart until after the benediction.

b. Unless necessary, avoid picking the strings too hard

c. Unless necessary, do not cross the quarterdeck area. (all from iWeb)

(168) a. ?Unless necessary, everyone should depart after the benediction.

b. ?Unless necessary, the strings should be picked hard.

c. ?Unless necessary, cross the quarterdeck area. (all modified from iWeb)

Both of these restrictions (the non-affirmative environment and the complement) appear

to be lifted when the adverb *otherwise* is included in medial or final position. And yet the FPC interpretation (169a,b) (equivalence to *it BE* counterparts; control by a situation contrasting with what is described in the matrix) still holds side-by-side with the FA interpretation (169c,d,e)

(169) a. Unless otherwise specified, we have the exclusive right...

b. Unless indicated otherwise, it would be best to refrigerate your unopened containers of almond milk.

c. Unless $_i$told otherwise, you$_i$ don't have to adhere to it.

d. Unless otherwise $_i$instructed, you must remain in your assigned seat... (all from iWeb)

e. Unless instructed otherwise, all single-use tracheostomy tubes should be used once only... (all from iWeb)

This gives additional support to the idea that FPCs cannot be characterised as involving control. Though intriguing, they are outside the remit of this dissertation.

Next, we will turn to other adjuncts that appear in similarly idiosyncratic constructions and are even more tightly integrated with their matrix clauses than bound adjuncts are.

2.2.5 Summative AdjP constructions

There is a ragtag group of **summative AdjP constructions**, a subset of bare adjective-headed FAs, with members that appear usually at the beginning of matrix clauses and are understood as predicative of that entire clause in a way that is again reminiscent of relative clauses (Huddleston & Pullum 2002: 1359; Quirk et al. 1985: 426). Quirk et al. (1985) claim more specifically that they are related to "comment clauses introduced by *what*" (i.e., appositive fused relatives; see section 2.2.3), and invariably introduce a matrix clause that is "in some measure strange".

(170) a. Most important, his report offered prospects of a great profit. (=What is most important...) (Quirk et al. 1985: 426)

b. More remarkable still, he is in charge of the project. (=What is more remarkable still...) (Quirk et al. 1985: 426)

This is too narrow. Erdmann (1997), the only study I know that focuses on these at any length, notes several that cannot be usefully paraphrased as fused relatives such as (171a), and provides a menagerie of what he calls 'sentence adjectives' and 'sentence adjective phrases' that are both numerous and highly idiosyncratic. Most of his words do involve 'strangeness', but his collection is still incomplete, and not all examples I found involved matrix clauses that were strange (171b).

(171) a. Most likely, they can track the IP address... (=*It is very likely that they can track addresses*, but ≠**What is very likely, they can track addresses* and ≠**They can track addresses, which is likely*)

b. Even more reassuring, over his six years in the minors his batting average is .276. (both from iWeb)

A slightly better but still imperfect characterisation is that they function to relate a proposition to previous text (Erdmann 1997: 1436). In (171b), the other facts were reassuring, but this one about his batting average is even more so. Erdmann (1997: 1435) also briefly mentions our FPCs (*if necessary*, *when true*), but I believe they have to be kept separate: they do not have the same role as commentary on the discourse, and the control patterns they involve, which he does not note, are quite different (recall section 2.2.4).

We can see how idiosyncratic summative AdjPs are by looking more closely at a few. Take those headed by *unknown*. Of course, *unknown* is fine as a free adjunct:

(172) $_i$Unknown, $_i$overlooked and $_i$surrounded by some 500 plays, [the student actors]$_i$ didn't seem to stand a chance at the Fringe. (iWeb)

But when *unknown* is modified by a PP headed by *to*, then control by the matrix clause is allowed (and even suggested) as in (173a). The subject-control reading is still available, but it can be fully ruled out for other reasons, as in (173b) (someone cannot simultane-

ously be a friend and unknown).

(173) a. $_{i<j}$Unknown to us, [[the plastic port]$_i$ cracked]$_j$.

b. $_{*i,j}$Unknown to me, [[one of my friends]$_i$ called up the Pizza Hut. . .]$_j$. (both from iWeb)

Here, Erdmann's generalisation that the AdjP functions to relate a proposition to previous text seems less applicable. And both relative paraphrases, *pace* Kortmann (1991: 72f.) and Fischer & Høyem (2019: 2), seem slightly odd.

(174) a. ?The plastic port cracked, which was unknown to us.

b. ?What was unknown to us, the plastic port cracked.

c. ?One of my friends called up the Pizza Hut, which was unknown to me.

d. ?What was unknown to me, one of my friends called up the Pizza Hut. (all modified from (173))

When *unknown* selects PPs headed by other prepositions, we find only subject control. In (175a), *Star Wars* is what was unknown in 1977, not the ensuing movie empire. The clause-control reading is ruled out by the missing *to*-PP even though it also makes sense as an assertion, as we can see in (175b) when we add the missing *to all of us*.

(175) a. On May 25, 1977, Star Wars. . . was released by LucasFilms [sic] Ltd. $_{i,*j}$Unknown at the time, [[this movie]$_i$ would spark an enormous movie "empire"]$_j$. . . (iWeb)

b. [. . .] $_{i,j}$Unknown to all of us at the time, [[this movie]$_i$ would spark an enormous movie "empire"]$_j$. . . (modified from (a))

There are many other constructions like this, like *consistent with*+NP (176a). If *consistent* takes an *in*-PP (176b) or nothing (176c) as complement, we get a free adjunct reading.

(176) a. $_i$Consistent with this policy, [no JPMorgan Chase employee is permitted to invest in SPEs with which the Firm is involved]$_i$. (WEB)

b. $_i$Consistent in flavor, texture, and color, this glaze$_i$ is a time saver for all

chefs. (iWeb)

c. ${}_i$Consistent, QB Brandon Silvers$_i$ has been a 200-yard machine... (iWeb)

The readings unique to certain words in certain circumstances are, I feel, best dealt with on a construction-by-construction basis, and so I must set them aside for the moment.

2.2.6 Integrated participial complements

The next *-ing* phrases to distinguish are **integrated participial complements (IPCs)**[20] (De Smet 2012: 102-130; De Smet 2015; van de Pol 2019), which are selected by matrix elements without actually being arguments.

(177) a. Bob$_i$ was happy ${}_i$eating his sandwich on a park bench.

b. Bob$_i$ had a hard time ${}_i$believing in God once he went to university.

Like BAs, these same clauses are usually interpreted as free when in the left periphery:

(178) a. ${}_i$Eating his sandwich on a park bench, Bob$_i$ was happy.

b. ${}_i$Believing in God, Bob$_i$ had a hard time once he went to university.

In (178a), Bob's happiness is now not so narrowly focused on his eating his sandwich, but rather takes on an almost tangential relation. And Bob was a skeptic in (177b) but is a believer in (178b): in the IPC, Bob was no longer convinced by arguments in favour of God's existence, while in the FA, Bob's faith in God created difficulties for him.

IPCs differ from BAs in being even more tightly integrated with the matrix clause (179b). They sit somewhere between complements (179a) and BAs (179c).

(179) a. Bob$_i$ liked ${}_i$eating sandwiches. (comp)

b. Bob$_i$ was busy ${}_i$eating sandwiches. (IPC)

c. Bob$_i$ did his homework ${}_i$eating sandwiches. (BA)

[20]Integrated participial complements are referred to as 'integrated participle complements' in De Smet (2012, 2015) and 'gerund-participial complements' in Huddleston & Pullum (2002: 1259). The former term breaks with the use of 'participle' with heads and 'participial' with phrases, while the latter term does not adequately distinguish the construction from normal *-ing* complements such as *skiing* in *He enjoys skiing.*

Eating sandwiches is an argument of *liked* (179a) but not of *busy* (179b) or *do* (179c), both of which are saturated: (179b) and (179c) are still grammatical even without the underlined clause. But *eating sandwiches* is still selected by *busy* in (179b) in a way that it is not by *do* in (179c). When the subordinate clause is removed, the matrix predicate changes in meaning in the IPC example (179b), where Bob becomes busy in general instead of specifically with eating. In the BA example (179c), Bob would do his homework in more or less the same way regardless of the presence of the BA (De Smet 2012: 104).

Wh-extraction is usually permissible with IPCs (180a), and De Smet (2012: 104f.) claims that this differentiates them from BAs like (180b), which he says do not. But BAs like (180c) do in fact allow for *wh*-extraction.

(180) a. What was he happy eating?
b. *What did he do his homework eating?
c. What did he sit at the table eating?

This suggests that the ability to support *wh*-extraction is probably determined by something else, such as whether the clauses can be construed as depicting a single event (Truswell 2007b, 2011: 129-173). This construal is easier with, but not limited to, IPCs, which are closer to regular complements than adjuncts are.

IPCs are not fully productive and thus lend themselves to a constructional analysis. There are non-exhaustive lists in De Smet (2012: 106-110, 2015: 51) of some major construction types: (i) predicative adjectives expressing emotion (181a), external judgment (181b), occupation (181c) or progress (181d), (ii) light verbs with NPs indicating success (181e) or rights (181f), or (iii) *spend* with NPs referring to things that can be used up, like time periods (181g).[21]

[21] *Spend* is particularly tightly bound with the nonfinite phrase, but this probably is not syntax. De Smet (2015: 49f.) notes that *spend*+TIME obligatorily selects a complement (whether an IPC or similar elements like *there* or *on that*) while *spend*+MONEY does not, but connects this with pragmatics and informativity. Merely spending my time is uninformative, as everyone spends time existing, and so a complement is required in (ia), while spending money is informative enough not to require anything else to be a complete communicative act in (ib).

(i) a. I spent 2 hours/my whole afternoon *(playing Virtua Fighter 3).

(181) a. He was happy doing that.

b. He was brave doing that.

c. He was busy doing that.

d. He was finished doing that.

e. He had difficulties doing that.

f. He had no business doing that.

g. He spent four years doing that.

Like BAs, IPCs are within the scope of, for instance, matrix negators (182) (De Smet 2015: 41).

(182) He wasn't busy writing his dissertation; in fact, he hadn't even started yet.

De Smet (2015: 41) claims that IPC constructions are rigid in their control, but I have found most of the transitive ones (*have difficulties*, *have success*, *spend hours*, etc.) to be fairly flexible:[22]

(183) a. Video Synopsis is an extremely powerful tool that helps to improve security performance and greatly reduces the hours spent investigating accidents. (iWeb)

b. However, the VETTS had already committed to the venues and dates for this year, and there were difficulties fitting it into their programme this year within the time constraints. (iWeb)

c. I know there has been some success writing Linux drivers for generic gamepads... (iWeb)

d. More recently, there has been some success writing specs in DynamoBIM. (Deutsch (2017) *Convergence: The Redesign of Design*)

e. Due to bad weather there was difficulty completing the circuit (TIME)

b. I spent 2000 yen/all my pocket money (playing Virtua Fighter 3).

[22] *Have no business/right* V-*ing* does not share in this, but it is a particularly rigid construction that is unacceptable without negation, as noted by De Smet (2015: 48)

(i) *He had [business/a right] doing that.

f. There was some difficulty adjusting to an older woman. (TIME)

And so they pattern together with BAs in not admitting of inanimate non-matrix-subject control. Experiencer/logophoric control seems to be as available in these cases as it is for gerunds in the complements of prepositions, which IPCs are in competition with:

(184) a. I remember the hours spent on [investigating accidents].
b. I remember the difficulties with [fitting it into their programme].
c. There was success in [writing Linux drivers for gamepads].
d. There was success in [writing specs in DynamoBIM].
e. There was difficulty in [completing the circuit].
f. There was difficulty in [adjusting to an older woman].

The urge is to write off this sort of control as arbitrary NOC, but that won't do.

(185) a. After two days (of/spent) drinking, Bob felt horrible.
b. After two days (of/spent) whining, Bob was ready for a vacation.

The control of the *-ing* verb is more arbitrary with *of* than with *spent*, which invariably points things towards *Bob*. I will bring up examples like this again on p.213 in the last section of ch.3, where I look at adjuncts that are difficult to deal with under a movement-based account.

2.2.7 Verbal gerunds

As I mentioned in section 2.1, the constructions we are studying are often described as 'augmented' by elements like *after* and *while*. These serve to help clarify how the two clauses are semantically related. The items that 'augment' absolute clauses (*with* and *without*, *what with*, and *and*) have sometimes been claimed to be in complementary distribution with those that select free adjuncts (Kortmann 1991: 11), but *without* works for both absolutes (186a) and free adjuncts (186b), as does the grammaticalised construction *what with* (187) (as observed in Trousdale (2012)). Indeed, (187c) involves a coordination of a free adjunct with an absolute, both of which appear in the complement of *what with*.

(186) a. **Without** the client receiving the money, there was little reason to proceed.

b. **Without** $_i$receiving the money, the client$_i$ had little reason to proceed.

(187) a. Ma knows that something is going on, **what with** him out every night and coming home high all the time. (TIME (1958))

b. Burt$_i$ had forgotten to keep his weather eyes out, **what with** $_i$getting this poor whale out of all the trouble he was in, and hadn't noticed that it was beginning to blow. (Robert McCloskey (1963) *Burt Dow, Deep-Water Man*)

c. ... after another long time, **what with** $_i$standing half in the shade and half out of it, and **what with** the slippery-slidy shadows of the trees falling on them, the Giraffe$_i$ grew blotchy... (Kipling (1902) *Just So Stories*)

At a first glance, 'augmented' (or full) free adjuncts seem uniform: in each case, a preposition takes a nonfinite *-ing* phrase as its complement (*after eating*, *while eating*). But Stump (1981: 10-13) noticed that the various 'augmentors' for free adjuncts are not equally compatible with all the various heads. *After*, for instance, can introduce predicative phrases that are apparently headed by an *-ing* verb (*after eating*), but not those that are headed by *-en* verbs (**after stranded*), adjectives (**after drunk*), prepositions (**after at the beach*) or nouns (**after president*). *When*, on the other hand, works well in all of these situations (*when eating*, *when stranded*, *when drunk*, *when at the beach*, and *when president*). These are not isolated examples: *despite*, *in*, and *by*, for instance, pattern with *after* in only taking phrases headed by *-ing* verbs, and *while*, *although*, and *if* pattern with *when* in being more flexible. Stump's solution was to adopt the traditional distinction between prepositions like *after* and subordinating conjunctions like *when*. Thus, *after eating* would involve a preposition selecting a **verbal gerund** phrase and *when eating* would involve a subordinating conjunction selecting a participial phrase, despite their many other similarities.

Some have gone on to split up the augmentors more finely still. Kortmann (1995: 199ff.) points out that although *before* and *on* pattern together in that their NP com-

plements are both non-predicative (unlike *while*), only *before* can take a finite clause as a complement (*before/*on he returned home*), which he takes to indicate that *before* is not a proper preposition (a position echoed by Fonteyn & Van de Pol (2016: 192), who say that *after* (like *before*) is ambiguous between preposition and (subordinating) conjunction).

This would imply a three-way distinction for augmentors: prepositions (188a), subordinating conjunctions (188b), and 'improper' prepositions (188c).

(188) a. **On** returning to Australia, he continued to develop and refine his original compositional language.

b. **While** returning home from a party in New York, the magician was pulled over by the cops for speeding...

c. **Before** returning to consulting in 2015, she served as Web Director at the American Society Civil Engineers... (all from iWeb)

I reject this division and follow Huddleston & Pullum's (2002: 599f.) analysis of words like *before* and even *while* as just as much prepositions in all their uses as words like *on*; as I said in section 2.2.1 on the topic of deverbal prepositions, a difference in complementation is not enough to justify a difference in categorisation.

But I do think that the complement of the preposition in (188b) is fundamentally different from its equivalents in (188a,c). As Stump (1981: 11-13) showed, *while* can select phrases headed by predicative nonverbal items that prepositions like *before* and *on* cannot. Of these heads, noun phrases are particularly illustrative because they are perfectly fine, of course, if they are not predicative. Both *while* and *despite*, for instance, can take a noun phrase; it is the interpretation that differs.

(189) a. While a teacher, I can still enjoy the concert.

b. Despite a teacher, I can still enjoy the concert.

(189a) involves predication: it means that the speaker is a teacher but can still enjoy the concert. (189b), on the other hand, does not involve predication: it means a second person who is a teacher can potentially spoil the speaker's enjoyment of the concert.

Seeing that any NPs that follow *while* or *when* have to be interpreted predicatively, I would argue that these NPs are actually interpreted as being within verbless clauses. This is in accordance with the analysis in Huddleston & Pullum (2002: 736).

It is not just the predicative quality of their complements that differs. There is also a difference in how readily these same prepositions can take on gerund phrases with explicit subjects (De Smet 2010: 1159f., Fonteyn & Van de Pol 2016: 186):

(190) a. Miley Cyrus has me thinking twice about ever wanting to watch any more awards shows with my kids in the room. (After/*When) her performing her own song on last nights [sic] VMAs, she stripped down to a nude bra and panty set...

b. (After/*when) my losing the keys, she and her husband drove for hours to get us another set.

c. (After/*when) his receiving the information he handled the problem right away with very good communication skills.

d. (Despite/*when) their upgrading the line of boats they were hurt by declining sales... (all modified from iWeb)

Granted, examples like these are only rarely attested, but they are distinctly more grammatical with prepositions like *after* or *despite* than *when*.[23] Notice, too, that discarding the explicit genitive subjects in (190) would make prepositions from either group acceptable in every case (although (190b) would be controlled differently). It is also important to note that none of the adjuncts in (190) can appear with a genitive subject but without a selecting preposition. Bare FAs cannot take a genitive subject; anything that does take a genitive subject involves a different structure.

It is tempting, then, to say that *after her performing* and *after performing* are simply different from one another: the former is necessarily a verbal gerund because of *her*, while the latter is ambiguous between a verbal gerund and a free adjunct. This is the conclusion that Fonteyn & Cuyckens (2014: 43) come to when they claim that in PDE we cannot

[23]My judgments here are not shared by everyone. In Culicover & Jackendoff (2001: 498), for example, it is claimed that genitive subjects are unacceptable following both *after* and *while*.

tell whether a given *-ing* phrase following *after* is headed by a gerund or participle. But we must also account for why none of the free adjuncts headed by nouns, adjectives or prepositions is predicative (or, in some cases, even acceptable) with *after*.

The difference between verbal gerunds on the one hand and free adjuncts and absolutes on the other is somewhat disguised by the fact that all are internally verbal. McCawley (1983: 274-6) notes that while absolutes lack a verb, they can be understood as clausal because of the fact that they can include negation and adverbs (191). The same holds for nonverbal free adjuncts (192).

(191) a. With the windows not open, it must be very uncomfortable in that office. (McCawley 1983: 274)

b. With most students [evidently/perpetually] eager to learn about new things, we shouldn't teach the same courses year after year. (McCawley 1983: 275)

(192) a. Not yet a teenager, Nina has already developed the survival skills necessary to endure a life of brutalization. (iWeb)

b. Definitely a crowd pleaser, it's the perfect white wine to pair with rich food on the Christmas table. (iWeb)

Regular NPs nested within PPs, of course, do not allow this, which is as expected:

(193) a. Despite (*apparently) objections from his girlfriend, Rachel, he gets his BBQ sauce...

b. After (*not) an introduction, a representative for the Glengarry Pioneer Museum will highlight the various buildings including the newly installed one-room schoolhouse. (both modified from iWeb)

Now verbal gerunds appearing within PPs have the odd noun-on-the-outside verb-on-the-inside structure that Pullum (1991) discusses (194), and so they can take all the regular verbal accoutrements as adjuncts (195). This makes them appear to be closer to the FAs and absolutes than the NPs in (193):

(194) a. While the weaker victim will likely regret aggressively attacking the bully...

b. I remember not wanting to open my eyes... (both from iWeb)

(195) a. Despite apparently being visibly disappointed at the first sight of his 18-year-old bride Charlotte, George became very close to his wife, who wore a diamond ring with a portrait of the king.

b. After not hearing from Irene for a week, Max goes to her apartment (both from iWeb)

This structural similarity to FAs and absolutes can lead us to analyse verbal gerunds as being similarly predicative, too, and I am arguing that this is not quite right.

This brings us to the question of whether we should maintain the single label gerund-participle or split the category in two. The acceptability of genitive subjects for verbal gerunds cannot be fully explained by CGEL's proposal for their distribution. There, the case of the subject is acknowledged as one of the few internal differences between traditional gerund and present participial clauses, but it is accounted for by looking at whether the clause is selected or not (Huddleston & Pullum 2002: 1220f.). More specifically, genitive subjects appear only when the phrase is selected by the verb (196a,b) or a preposition (196c).

(196) a. (My) knowing the ropes in London and Paris is an advantage. (modified from COHA (1953))

b. I hope you don't mind (my) spilling the beans. (modified from COHA (1986))

c. No man is trying to help me who stands in the way of (my) telling the truth. (modified from COHA (1975))

d. (*His) being a practical lawyer with a large general practice, he knew that many titles were then clouded by government liens (modified from SCOTUS (1960))

e. Anyone (*his) claiming to have been injured by a discriminatory housing practice, even if not himself directly discriminated against, is authorized to

seek redress under 810. (modified from SCOTUS (1979))

Most of the time, this works, but it only partially accounts for adjuncts. In the case of (197), the presence of the preposition *on* does appear to license the genitive subject, and so the CGEL account holds.

(197) a. On (her) hearing his cry, she dashed into the garden.
b. (*Her) hearing his cry, she dashed into the garden. (both modified from Huddleston & Pullum (2002: 1222))

But not all prepositions make genitive subjects acceptable. The contrast in (198) cannot be explained by the CGEL account. The difference is that (198a) is saturated because of *despite* and (198b) is not because of *although*.

(198) a. Despite (his) having no TV himself, he was able to see the programme.
b. Although (*his) having no TV himself, he was able to see the programme. (both modified from Huddleston & Pullum (2002: 1222))

When we distinguish prepositions like *while* from *after*, we can understand why the sentences in (199) have differing grammaticality, but those in (200) do not.

(199) a. While a teacher, John was under a lot of stress.
b. *After a teacher, John was under a lot of stress.

(200) a. While eating dinner, John noticed a fly.
b. After eating dinner, John noticed a fly.

In this view, (200a) and (200b) are superficially similar in their use of the functionally overloaded *-ing* form: only *while* in (200a) selects an unsaturated clausal complement and so it is parallel to a bare free adjunct. Both (199a) and (200a) are predicative full free adjuncts headed by the preposition *while*, but (200b) is a saturated verbal gerund selected by the preposition *after*, and the predicative relationship arises for different reasons. This is reflected in the ungrammaticality of (199b). Table 2.8 on p.81 sets out the complementation patterns in greater detail.

This division is not new; it was the analysis given in both Poutsma (1929) and Jespersen (1940). In adopting it, I do not mean to say that language users do not generalise across gerunds and participles. De Smet (2010) points out that gerunds and participles can retain distinct characteristics but still be part of a larger generalisation under the assumption of default inheritance. If the division is right, it calls into question the predictions of any theory of control that assumes that the sentences in (200) have identical structures, as we will see in ch.3. There will also be a discussion of some potential control differences between *after* and *while* adjuncts in section 4.4.3.

	-ing	Non-predicative NP	Predicative NP	Verbal gerund	Finite clause
after	after meeting him	after that day		after her meeting him	after she met him
before	before meeting him	before that day		before her meeting him	before she met him
on	on meeting him	on that evening		on her meeting him	
despite	despite meeting him	despite the noise		despite her meeting him	
without	without meeting him	without any noise		without her meeting him	
while	while meeting him		while president		while she met him
when	when meeting him		when president		when she met him
although	although meeting him		although president		although she met him
once	once meeting him		once president		once she met him
if	if meeting him		if president		if she met him

Table 2.8: Adjunct-internal complementation patterns

2.2.8 Taking stock

2.2.8.1 Apparent non-subject control

Throughout this chapter, we have seen several constructions that are not controlled by the matrix subject. They can be divided according to whether they are easy to mistake for either a bound (201) or free adjunct (202). There are NP-internal PPPs (regular (201a) or shifted (202a)) for which a pronoun is unavailable. There are also predicative complements in complex clauses (again, regular (201b) or shifted (202b), but sometimes also preposed (202c)) that attach outside the NP but can be found only with certain matrix verbs. And then we have appositive PPPs (202d), appositive NPs (202e), FPCs (202f), and summative AdjP constructions (202g). Finally, there are deverbal prepositions that are sometimes oriented toward a discourse participant but not controlled (202h).

(201) a. The flash freezes (the person/*him)$_i$ $_i$being photographed.

b. She (saw/*approved) him$_i$ $_i$coming down the stairs. (both modified from iWeb)

(202) a. Moving along (the hallways/*them)$_i$, $_i$painted a dizzying aqua, and peeking into the rooms, one can almost imagine the figures that once ran rampant in old Times Square. (modified from iWeb)

b. . . . he (saw/*approved) her$_i$ again, $_i$standing a little way off. . . (modified from iWeb)

c. $_i$Standing on the corner, I (saw/*approved) her$_i$.

d. This one began at 20, making it quite simple to determine the next number. . . (iWeb)

e. High pipe-line rates also gave the majors a hidden rebate on any oil carried for the independents, a rare event. (COHA (1941))

f. I hold the gravest suspicion. . . that you have abused the innocence of this child. . . If true, you're guilty of an abominable crime, Miller. . . (Movies: *The Young One* (1960))

g. Even better, only drill until the point breaks through. . . (COHA (1982))

h. Supposing that was the case, that's not your business. (TV: *Miami Vice* (1986))

This proliferation of potential structures can cause parsing problems. For instance, in (203a), a subject-controlled free adjunct (='the girls are followed') is nested within an absolute clause (='the girls run and try to stop him'). It is perfectly grammatical as it is. A comma after *again* is unnecessary (the absolute clause in *He came out with his hands over his head* is fine without one), but it would prevent us from misanalysing the PP *with the four little girls* as selected by *start*. Without that comma, other structures emerge (203b,c).

(203) a. Ribsy$_i$ started all over again with the four little girls$_j$, $_j$followed by [their mother and father]$_k$, $_j$running after him (and $_j$trying to stop him).

b. Ribsy$_i$ started all over again with the four little girls$_j$, $_i$followed by [their mother and father]$_k$, $_k$running after him (and $_k$trying to stop him).

c. Ribsy$_i$ started all over again with the four little girls$_j$, $_j$followed by [their mother and father]$_k$, $_k$running after him (and $_k$trying to stop him). (all modified from Beverly Cleary (1964) *Ribsy*)

In (203b), we have a regular FA (='Ribsy is followed') and a shifted PPP (='the parents run and try to stop him'), while in (203c) we have two shifted PPPs (='the girls are followed'; ='the parents run and try to stop him'). This confusion is not connected with dangling.

I would not be surprised if there were more construction-specific control patterns. Regardless, we must make sure to exclude the ones we know from consideration so that we do not accidentally suppose adjunct control to have greater variety than it actually does. We have to be vigilant, as (204) demonstrates. The problem of sorting out free and bound adjunct control is multiplied in the presence of these other structures, which is why I will often choose to examine structures that are initial and clearly unsaturated.

(204) a. That was when I$_i$ saw him$_j$ $_{i<j}$standing on the corner.

b. That was when I_i saw him_j, $_{i,j}$standing on the corner.

c. That was when I_i saw him_j, $_{i<j}$standing on the corner and $_{i<j}$smoking.

d. That was when, $_{i,j}$standing on the corner, I_i saw him_j.

e. When $_i$standing on the corner, I_i saw him_j.

We must also be cautious about verbal gerunds like the one in *after eating*, and continually check whether they are interpreted in the same way that a participial adjunct like *while eating* would be.

2.2.8.2 (X)COMP and (X)ADJ: *while* as diagnostic

Let's take a moment to set out our observations about bare and full adjuncts more explicitly. For now, I will characterise free adjuncts and bound adjuncts that are bare as unsaturated adjuncts (XADJs) after Dalrymple (2001: 114, 2019: 589-593) and Bresnan et al. (2016 [2001]: 99).[24] Any verbless or nonfinite phrases in these adjuncts are interpreted as controlled.

Full FAs and BAs can be classified by their heads. Prepositions like *while* subcategorise for an unsaturated complement (XCOMP), but prepositions like *after* subcategorise for a saturated complement (COMP), such as a verbal gerund or unpredicative NP.[25] The dependency in the former can be handled through functional uncertainty paths, which allow us to access embedded f-structures.

[24]XADJ involves functional control, so this is a temporary simplification.

[25]Incidentally, this gives us something to say about VP Complement Drop, which Jacobson (1990) demonstrated is not possible with raising verbs like *seem* (ia) but often possible with control verbs like *try* (ib):

(i) a. *John seemed to go and Sally also seemed *(to go).
b. John tried to go and Sally also tried (to go).

Dalrymple (2001: 317) and Dalrymple et al. (2019: 549f., 564) say there are two ways to account for this. It could be a matter of semantics: the raising predicate cannot drop the complement because that would leave no sign of the only predicate that selects the subject. That is, in (ia), *Sally* is selected only by *go* and not by *seem*, so the former cannot be dropped, but in (ib) *Sally* is selected by both verbs and so the complement *to go* can drop. But there is another explanation. Dalrymple posits that raising verbs like *seem* select an XCOMP while control verbs like *try* select a COMP. So VP complement drop might be barred within an XCOMP but permitted within a COMP. If I am right that *while* adjuncts do select an XCOMP, this weakens support for the syntactic version (which was criticised separately in Asudeh (2005: 505f.)), as complement drop in (ii) is at least as fine with *while* as it is with *before*.

(ii) He always wanted to climb Everest, but he died (while/before) trying.

We can see the difference between XCOMP-selecting *while* and COMP-selecting *after* by checking what happens when we use them to embed as complement something that can otherwise appear as an XADJ. When *while* selects an XCOMP, it forces all nonfinite and verbless complements to be as predicative as they are in an XADJ, and it embeds that unsaturated predicate within a larger adjunct. And so, the item as a whole maintains all the essential characteristics of an XADJ: its complement is unsaturated and so necessarily predicative, while the structure as a whole functions as an adjunct. That is why we get adjuncts like *while a policeman* that force predicative readings of NPs.

Meanwhile, *after* also embeds its selection within a larger adjunct, but the selection itself is a COMP, not an XCOMP. Any predicative qualities must stem from the COMP itself. If COMP is a verbal gerund (i.e., it is headed by an *-ing* verb as in the *after* variant of (205a)), the difference between *while* and *after* is slight, as verbal gerunds are (by definition) internally verbal and therefore understood as 'controlled' even when they are complements (e.g., *I recommend apologising to him*). But if the COMP is headed by anything else (205b,c), the result with *after* is ungrammatical or potentially incoherent. A past-participial phrase cannot be selected as a saturated complement in any circumstance (e.g., **I enjoy fried in a pan*). This renders (205b) ungrammatical with *after*. An NP can be selected as a complement but, unlike a verbal gerund, it is not understood as 'controlled' in any way (e.g., *I enjoy vacations*). That is why (205c) is incoherent; it is difficult to understand a professor as temporally antecedent to the enjoyment of a rock concert. If the NP selected by *after* had referred to an event (e.g., *her graduation*), we would not have that difficulty. The only way to salvage (205b,c) as they stand with *after* would be to insert *being* to make them verbal gerunds like the *after* variant of (205a).

(205) a. (While/after) eating lunch, we had a good talk.

b. (While/*after) designed primarily for gaming, the board makes an excellent all-around keyboard... (modified from iWeb)

c. (While/?after) a professor, she also enjoyed rock concerts.

The distinctions I have just discussed are illustrated in the f-structures for (206) in figures

2.1, 2.2, and 2.3. The first two figures, as they stand, indicate that functional control is the only option, but we will find a way to incorporate anaphoric control in section 4.4.

(206) a. Eating lunch, Roger talked.

b. Roger talked while eating lunch.

c. Roger talked after eating lunch.

$$\begin{bmatrix} \text{PRED} & \text{`TALK}\langle\text{SUBJ}\rangle\text{'} \\ \text{SUBJ} & \boxed{1}\begin{bmatrix}\text{PRED} & \text{`ROGER'}\end{bmatrix} \\ \text{XADJ} & \left\{\begin{bmatrix} \text{PRED} & \text{`EAT}\langle\text{SUBJ,OBJ}\rangle\text{'} \\ \text{SUBJ} & \boxed{1} \\ \text{OBJ} & \begin{bmatrix}\text{PRED} & \text{`LUNCH'}\end{bmatrix}\end{bmatrix}\right\} \end{bmatrix}$$

Figure 2.1: Bare FA as XADJ (preliminary)

$$\begin{bmatrix} \text{PRED} & \text{`TALK}\langle\text{SUBJ}\rangle\text{'} \\ \text{SUBJ} & \boxed{1}\begin{bmatrix}\text{PRED} & \text{`ROGER'}\end{bmatrix} \\ \text{ADJ} & \left\{\begin{bmatrix} \text{PRED} & \text{`WHILE}\langle\text{XCOMP}\rangle\text{'} \\ \text{XCOMP} & \begin{bmatrix}\text{PRED} & \text{`EAT}\langle\text{SUBJ,OBJ}\rangle\text{'} \\ \text{SUBJ} & \boxed{1} \\ \text{OBJ} & \begin{bmatrix}\text{PRED} & \text{`LUNCH'}\end{bmatrix}\end{bmatrix}\end{bmatrix}\right\} \end{bmatrix}$$

Figure 2.2: *While*-adjunct as ADJ headed by P selecting XCOMP (preliminary)

$$\begin{bmatrix} \text{PRED} & \text{`TALK}\langle\text{SUBJ}\rangle\text{'} \\ \text{SUBJ} & \begin{bmatrix}\text{PRED} & \text{`ROGER'}\end{bmatrix} \\ \text{ADJ} & \left\{\begin{bmatrix} \text{PRED} & \text{`AFTER}\langle\text{COMP}\rangle\text{'} \\ \text{COMP} & \begin{bmatrix}\text{PRED} & \text{`EAT}\langle\text{SUBJ,OBJ}\rangle\text{'} \\ \text{POSS} & \boxed{1}\begin{bmatrix}\text{PRED} & \text{`PRO'}\end{bmatrix} \\ \text{SUBJ} & \boxed{1} \\ \text{OBJ} & \begin{bmatrix}\text{PRED} & \text{`LUNCH'}\end{bmatrix}\end{bmatrix}\end{bmatrix}\right\} \end{bmatrix}$$

Figure 2.3: *After*-adjunct as ADJ headed by P selecting COMP

In figure 2.3, I assume that the unexpressed possessive NP is the functional controller

of the subject of the verb in the same manner that we would expect with an explicit possessor (e.g., *after their eating lunch*). I have made this assumption after Bresnan et al. (2016 [2001]: 316f.).

We can use XCOMP-selecting prepositions like *while* to diagnose whether a given 'bare' item is a free adjunct (XADJ) or not. When we add *while*, these items are turned into XCOMPs embedded within ADJs. This lets us easily detect deverbal prepositions (207a,b), predicative complements (207c), PPPs (207d,e), summative AdjP constructions (207f), IPCs (207g), and appositive NPs (207h). None of these items qualifies as an XADJ when it is alone (deverbal prepositions are saturated, predicative complements and IPCs are not adjuncts, PPPs are not clauses, etc.)

(207) a. (?While) following the end of the war, Slovenia joined Yugoslavia.
b. (?While) considering the alternatives, what choice do we have?
c. I saw her$_i$ (?while) $_i$standing on the corner.
d. She was snuggling a sloth$_i$ (?while) $_i$hanging from a branch.
e. [The teacher hadn't been notified]$_i$, (?while) $_i$making a bad situation worse.
f. (?While) $_i$unknown to us, [the paddling pool started to leak]$_i$.
g. Bob was busy (?while) eating sandwiches.
h. Bob said he was busy, (?while) an unlikely story.

The coindexation indicates what would have been the case without *while*. I have used a question mark here to indicate that *while* has either made the given coindexation untenable or altered the meaning (sometimes drastically, but not always). For instance, (207g) is of course still grammatical, but it is no longer an IPC: Bob's state of being busy no longer necessarily stems from eating sandwiches.

Let's see how this is useful with an example. At the end of *Charlotte's Web*, Wilbur notices Charlotte's egg sac:

(208) Wilbur awoke and looked for Charlotte. He saw her up overhead in a corner near the back of his pen. She was very quiet. Her eight legs were spread wide. She seemed to have shrunk during the night. Next to her, attached to the ceiling,

Wilbur saw a curious object. (White (1952) *Charlotte's Web*)

This passage stood out to me when I was reading the book to my son, but I am convinced that this is only because I have spent most of the last decade sniffing out danglers. It does not stand out to most people who read it because it is not really a dangler: the verb *see* supports a complex-transitive clause.

Let's examine each adjunct separately:

(209) a. Next to her, Wilbur saw a curious object.
b. Attached to the ceiling, Wilbur saw a curious object. (both modified from (208))

Both can be analysed as fronted predicative complements, but (209a) really is impeccable with the PP *next to her*. There are some PPs that are obligatorily interpreted as free adjuncts, namely those that can function as complements of verbs like *become*, such as *out of control*. *Next to her* is different in that while it can take a predicand in sentences like (210a), there is no requirement for it to do so, as we can see in (210b) (Huddleston & Pullum 2002: 530f.).

(210) a. $_i$Next to her, her partner$_i$ was impossibly awkward.
b. Next to that, there's a pie chart. (both modified from COCA)

But we can eliminate both readings (fronted predicative complement and non-predicative) with *while*, and the difference is immediate (211a,b).

(211) a. While $_i$next to her, Wilbur$_i$ saw a curious object.
b. While $_i$attached to the ceiling, Wilbur$_i$ saw a curious object. (both modified from (208))

While is thus an invaluable diagnostic tool. If inserting it changes a free or bound adjunct's control pattern or meaning drastically, we should be alert to the possibility that the adjunct is really something else.

2.3 The free adjunct and its matrix clause

Even if we are sure we are dealing with a free adjunct, we need to consider how it is related to its matrix clause and whether its control properties are connected with the way in which it is attached. Additionally, we must consider the order in which the clauses are encountered, as this will have an important effect on how these clauses are incrementally processed.

2.3.1 Coordinate, subordinate, or supplement?

Free adjuncts are at once reliant on and independent of their matrix clauses. What status do they have with respect to them? In this dissertation, I will consider them to be syntactically subordinate to their matrix clauses, but with distinct intonation that has semantic implications.

In some situations, the interpretation of a free adjunct (212a) is similar to that of a coordinated clause (212b) or another main clause in sequence (212c). Any relation between the two clauses in any of the examples in (212) must be inferred.

(212) a. Paul entered the room, closing the door behind him.

b. Paul entered the room and closed the door behind him.

c. Paul entered the room. He closed the door behind him.

But there are good reasons to rule out an analysis supposing underlying coordination. Unlike coordinated clauses (212b), free adjuncts cannot stand on their own because they are missing various elements (tense, subjects, and sometimes verbs), and they can also appear in initial or medial position with a flexibility that is never available to an expanded coordinate (see Huddleston & Pullum (2006: 203)). And even though main clauses in sequence (212c) do have the desired flexibility of order, we are free to skip over main clauses in making sense of a series of them (213a), a freedom that does not exist with free adjuncts (213b), which are supposed to be related in some way to their matrix clauses (Bary & Haug 2011).

(213) a. Max bought a new bike. He had seen it in the newspaper. He paid 300 Euro for it.

b. ?Max bought a new bike. Having seen it in the newspaper, he paid 300 Euro for it. (both modified from Bary & Haug (2011: 8:2))

It seems that both the coordinated-clause and adjacent-clause analogies are not quite right, but we cannot adopt a straightforward subordinate analysis either for free adjuncts. As we saw in section 2.2, the prosodic gap found with FAs stops them from falling within the scope of matrix elements such as negation (de Swart 1999: 339, Verstraete 2007).

And so a free adjunct relies on its matrix, but appears to sit alongside the matrix structure instead of within it, distinct both intonationally and, to some extent, semantically. In other words, free adjuncts are best described as parenthetical supplements (Huddleston & Pullum 2002: 1350-1362, Huddleston & Pullum 2006: 208, McCawley 1982).

It is not immediately clear whether these generalisations should be captured through syntax or semantics. Both approaches to parentheticals have been taken. Free adjuncts should either receive an exceptional treatment reflecting their unusual status along the lines of McCawley (1982) or appear, as BAs do, within the phrase structure of the sentence. In the latter case, we would have to rely on semantics to do the heavy lifting. A feature such as COMMA from Potts (2004) could explain the differences we see.

For this dissertation, I will make the assumption that the latter approach will work. In this view, free adjuncts can be considered part of the matrix clause to which they are attached.

2.3.2 Position: initial, medial, and final

We have seen how free adjuncts are more flexible in where they appear relative to the matrix than bound adjuncts are. We will now turn to look at this flexibility more closely to understand how initial position is particularly tied up with dangling.

Adjuncts are easiest to process when they come after their matrix clauses. In that order, the immediate constituents of the sentence, minimally the two clauses, can be

more rapidly recognised without burdening the processor (see Hawkins (2004: 57f.) for non-adjuncts and Diessel (2005) for finite adjuncts). If the FA appears in initial position, then once it is recognised as an adjunct, we must hold that adjunct clause in suspension until the matrix clause appears. That is, the parser will know that a larger structure is required in order for the adjunct to attach to it, but will be unsure as to exactly what it involves. The more assumptions that can be made, the lighter this load will become.

There are also initial FAs that are not immediately recognised as adjuncts. Initial bare adjuncts (214a) are temporarily indistinguishable from gerundive subjects (214b) when the rest of the sentence has not been parsed (Diessel 2005: 456).

(214) a. I turned the car into my street. Finally reaching home after a long trip abroad, I put my key in the front door.

b. I turned the car into my street. Finally reaching home after a long trip abroad was such a relief.

The parser might either hold both parses as possibilities or guess at one parse, which, if it proves untenable, might be subsequently discarded.

If the FA appears in final position, on the other hand, the parser does not know that a biclausal sentence must be created until the parser encounters the second clause, so no suspension is necessary (again, see Diessel (2005: 458) on finite adjuncts). So if we look only at processing, it would seem that the final position is optimal.

This conclusion is supported by the distribution of FAs. Kortmann (1991: 139) found that FAs occurred in final position nearly twice as often as in initial position (32.22% initial, 6.87% medial, and 60.9% final). Bouzada-Jabois & Pérez-Guerra (2016: 188f.) came to the same conclusion for LModE and PDE via the International Corpus of English: FAs in final position were over three times more numerous in their data.

But then why do FAs appear in initial position at all? The answer lies in the fact that, crosslinguistically, 'adverbial' clauses actually tend to prefer initial position (Diessel 2001; Givón 2001b: 343). Most of these are finite (e.g., *after we ate dinner*), and so have none of the above processing concerns about the identity of the subject. That is not to

say that there is no processing cost to them—we still look forward to the next clause because we have an explicit interclausal relation to interpret. But Diessel (2005: 459ff.) argues this processing preference for final position is overridden by other semantic and pragmatic forces that prefer for the adjunct to be in initial position.

For instance, the position of the FA can affect temporal ordering with respect to the main clause due to iconicity, just as is the case with coordinated clauses (e.g., *She got in the bath and took her socks off*).

(215) a. He$_i$ sat down, $_i$crossing his legs.

b. $_i$Crossing his legs, he$_i$ sat down. (both modified from Kortmann (1991: 118))

There are also differences in how an initial free adjunct functions in the larger discourse. If an initial FA can fit in with context, it must, as it otherwise carries a presupposition involving having to create a new discourse entity that will presumably be made clear by the matrix. According to Crain & Steedman's (1985) Principle of Parsimony, "if there is a reading that carries fewer unsatisfied but consistent presuppositions or entailments than any other, then, other criteria of plausibility being equal, that reading will be adopted as most plausible by the hearer, and the presuppositions in question will be incorporated in his or her model" (see also Altmann & Steedman (1988: 203f.)). And so any ambiguity in the free adjunct (including the controller) is made to fit with the hearer's continually constructed mental model. Hearers prefer to resolve control to known entities rather than create an unknown entity to serve as controller.

More generally, FAs on the left periphery are more likely to serve as organising bridges between the preceding discourse and the matrix clause than those that are final. An initial FA can provide an orientation for the ensuing clause (Chafe 1984: 444f.). Chafe calls these adjuncts 'guideposts', and guideposts of course make more sense if they come before the thing which is being situated. Connective initial adjuncts thus bridge between successive matrix clauses, serving to ground the clauses that follow them. Adjuncts have both local semantic connections and global pragmatic ones, but the balance of these is

tilted in favour of pragmatics when the adjunct is initial, and in favour of semantics when it is final. This is unsurprising in the light of general information structure constraints. For more on how initial adjuncts in general serve to ground subsequent clauses and create discourse coherence, see Givón (2001b: 342-348).

The propensity for initial FAs to be controlled by elements other than the matrix subject has been frequently noted, and is sometimes thought to be linked to the height at which the adjuncts are supposed to attach to the matrix clause (Landau (1999: 205, 2003: 481-483) and Lyngfelt (2009a: 39)). Free adjuncts would attach high, and so would not be c-commanded by anything in the matrix. This would preclude a straightforward control relationship with elements of the matrix clause, allowing other controllers to take over, such as the speaker. That is not to say, of course, that such adjuncts must be unrelated danglers; in some cases both the adjunct's understood subject and the matrix subject may simply continue on referring to the topic under discussion (Lyngfelt 2009b: 174), in which case the sentence appears as though it is under normal control. Bound adjuncts, on the other hand, attach low and so can be controlled by elements in the matrix.

But there are reasons to believe that attachment height is not the best way to understand what is going on here. Let us start with (216), which Landau (1999) uses to support his claim that sentence-final adjuncts without an intonational pause (i.e., our final BAs) cannot find a controller other than the matrix subject. But it is simply not that bad. Even though final adjuncts are less likely to dangle, the possibility of non-subject control is still open to them, and there are plenty of attested final danglers (217) to confirm this.

(216) ?*Darkness fell quickly after pitching the tents. (Landau 1999: 205; his judgment)

(217) a. The Nihopalaoa is an interesting accessory that is unlocked after completing 10 hunts. (WEB)

b. My card was also not charged after placing the order. (WEB)

c. There is still plenty of head space left after making this amount. (iWeb)

d. Put simply, taxable profits are what is left after subtracting the cost of

housing, food, child care, health insurance... (iWeb)

e. ...the proceedings did not abate if the death of the bankrupt occurred after filing the petition...(SCOTUS (1915))

Some might argue that (217a) involves control by an implicit agent (i.e., the unlocker is the completer), but we will see in section 3.2.3 that this can be ruled out. For now, note that in (217b) the person who charged the card was not the person who placed the order. And in many cases the matrix clause cannot be understood as involving implicit agents at all.

Ackema & Schoorlemmer (1995: 182) come to the same conclusion with (218); they point out that the boilers and the tasters of the potatoes are not necessarily the same, even if we are encouraged to construe them that way.

(218) Potatoes are tastier after boiling them.

This sentence could be uttered, for instance, by chefs in the kitchen who will never taste the potatoes, but want to create something that is tasty for the diners who will be eating them. Green (2018) argues that it is the boilers, not the tasters, who have to make the report, but in (219), the customer who is speaking will not be the boiler (nor, for that matter, will the waiter).

(219) Waiter! Please take these potatoes back to the kitchen. They'll be tastier after boiling them for a few more minutes.

Let's return to the question of attachment height. As Hornstein (1999: 76fn11) points out, high attachment does not fit with the quantification patterns we find in sentences like those in (220).

(220) a. Look at the ingredient list and supplements fact panel on **every supplement** before buying **it**.

b. Check **every shot** after taking **it**...(both from iWeb)

The fact that quantifiers in the matrix can scope over pronouns in the adjunct leads us

to believe instead that the former c-commands the latter, which must therefore attach low.

This scope pattern does not hold when the adjunct is in initial position. De Swart observes that (221a) necessarily involves a single day, while (221b) does not. Neither of those involves a free adjunct, but we can create relevant examples that exhibit the same tendency; we have already seen similar negation scope patterns, and the proposed quantification patterns in (222) are unacceptable.

(221) a. On a beautiful Sunday in spring, every student on campus went hiking.
b. Every student on campus went hiking on a beautiful Sunday in spring. (both from de Swart (1999: 344f.))

(222) a. *When buying it, look at the list and panel on every supplement.
b. *When taking it, check every shot. (both modified from (221))

But there is still reason to think that the distinction might not be due entirely to structural height. Shaer (2004) shows that initial adjuncts can fall within the scope in certain discourse contexts (and, it seems, with contrastive stress along the lines of Culicover & Jackendoff (2012: 313-317)).

(223) At *three* o'clock the bomb didn't explode. That only happened at *four* o'clock. (modified from Shaer (2004: 294))

As Shaer (2004) points out, the data here is reminiscent of Birner and Ward's (1998) discussion of the discourse conditions on focus preposing. Birner and Ward set adjuncts aside, as they can move to the front of the sentence with relative ease (224a), but things are more difficult when the phrase is lexically governed (224b,c).

(224) a. In my living room, I ate an apple.
b. (*)On the table, I put an apple.
c. (*)An apple, I ate.

But (224b,c) work when there is a link from that preposed phrase back to previous

information, as in (225a,b).

(225) a. I tried to clean up the room. I put a throw on the couch, and [on the table], I put an apple.

b. Don't worry. I was hungry, but everything for the guests is still there. The banana cake and the pumpkin pie are untouched. [An apple], I ate, but I don't think you intended to serve fruit, right?

Direct repetition would have worked (*The banana cake, I found tempting, but I resisted*), but it is unnecessary. It is enough for the preposed element to be, for instance, a part of a partially ordered set (the couch and the table were different things to tidy up for the guests, while the banana cake, the pumpkin pie, and the apple were all things to eat). Preposing is also common when it relates back to an open proposition that is under discussion as in (226).

(226) These apples over here were grown locally. A pound fifty per kilo, they cost.

That is, the purchase of apples is under discussion, and so the price of apples is related back to that discourse. The open proposition is 'they cost X', and one possible value for that variable is preposed.

As I said above, adjuncts were not treated by Birner & Ward, but Shaer points out that the analysis they develop can be applied here to explain the more subtle scope distinctions we have been discussing. Shaer uses their conditions to explain when 'up-to-now' and 'existential' readings with the present perfect are available, but we can also take advantage of the discourse conditions to explain why (223) is fine: it would work embedded in a discussion of when the bomb blew up (and so the open proposition is 'the bomb blew up at x'). That is, we can force the within-scope reading, and so attachment does not seem to be the best explanation, as we should see a clearer demarcation.

Shaer (2004) stops short with focus-sensitive particles like *even*, but I find (227) to be as acceptable as (223) and without a trace of the reading in which the matrix clause depicts an unusual situation that obtains in the condition described in the adjunct:

(227) Frank needs to get off his phone. He's on Facebook when he *eats*. He's on Facebook when he *drinks*. When he *works out* he's even on Facebook.

Eating, drinking and working out form a poset providing values for the variable in 'Bob is on Facebook when he does X'. This allows *when he works out* to be preposed while still remaining within the scope of *even*. If the distinction between the two scope readings were structural, we would not expect context and prosody to overcome it. The distinction does not feel as solid as it should if attachment height is the right explanation.

What does this all mean? When we look at a sentence with an initial FA in isolation, our processors are taxed because we depend on the matrix clause to help us determine the control relation. When these sentences are placed in context, it is easier for us to make an initial guess at the adjunct's controller, which reduces at least one aspect of the processing cost. The other processing costs are still present even with that guess, but so are the benefits of increasing interclausal coherence. The anaphoric strategy we use for initial free adjuncts, quick and deep control resolution, is available whenever we encounter an adjunct, even in final position without a prosodic gap. It is not ruled out by apparent low attachment. The difference in that case is that the control relation with the matrix subject is immediately available, and that easy availability rules out all but the most salient of controllers outside the matrix clause. We will deal with this in greater detail starting in section 3.2 when we look at the various extrasentential controller types that are possible.

2.4 Kortmann's (1991) search for a controller

Nowhere has the control of free adjuncts been considered more thoroughly than in chapter 6 of Kortmann (1991). Its primary contributions include an illustration of the complexity of the problem of control and a consideration of the wide variety of clues the hearer uses to overcome that problem. I follow Kortmann up to a point. The variety of clues he provides is vitally important to my own account, and so I will discuss these here. I will then turn to a few problems with his proposal of how these clues are actually utilised by

the hearer. Kortmann says we use clues to rescue control relations gone wrong; I say we use them to prepare for parsing upcoming discourse.

When we examine danglers in isolation, it is often possible to find the intended controller somewhere else within the matrix clause. So our first move in resolving the control problem might be to arrange the possible controllers in the matrix into a kind of hierarchy such as the one suggested by Keenan & Comrie (1977), which was originally posited as a way to rank NP positions by the ease with which relative clauses can be attached. It encodes the observation that all languages can relativize subjects, some can relativize direct objects, fewer can relativize indirect objects, and so on. Keenan & Comrie also predict that any language that can relativize a given item type should be able to relativize all item types higher up in the hierarchy.

Kortmann uses a similar hierarchy on free adjunct controllers to determine how related a given free adjunct is to its matrix. The relatedness of a clause is therefore not binary (where all adjuncts taking subject control are thrown into one pile and the others all equally dangle), but gradient: relatedness refers to how easy it is to find a subject within the matrix clause. At one point, Kortmann (1991: 44) is careful to note that he does not see genitive possessors like *his* in *his mind* as potential controllers of FAs but rather as clues to the identity of the understood controller. Elsewhere, however, he refers to the 'search for a controller' in the matrix clause or cotext (Kortmann 1991: 56-57). I use the term 'controller' in this looser sense to refer to the linguistic or non-linguistic item that provides a way to identify the referent of the understood subject, without worrying about what sort of relation is involved. Kortmann's view is that the relatedness of the free adjunct to the matrix is in an inverse relation with the formal accessibility of either a controller or a clue-providing element within the matrix clause.

This relatedness, however, is only part of the picture when we are attempting to determine how acceptable a given free adjunct is. Where Kortmann differs from most earlier accounts is in how he claims that there are other factors that can make a free adjunct better or worse. This claim follows from the suggestion in Stump (1981: 44) that diverse options for the understood subject are available: it can be a contextually salient

individual, the speaker, and the matrix event or fact. Kortmann also goes on to show that cotext (i.e., preceding linguistic material) can also provide an acceptable understood subject.

Kortmann (1991: 49-64) presents a collection of factors that help the hearer decide what to do with an FA. These factors are organised into two groups. Group 1 contains factors that discourage the hearer from continuing on a search for an appropriate controller. These factors therefore mark those free adjuncts that dangle in a conventionalised way: the hearer expects them to dangle and is not bothered by the dangling. Group 2 contains factors that encourage the hearer to continue searching for a suitable controller, and is subdivided further into two subgroups according to whether those factors are overt or not.

1. Group 1 (4 factors that do not encourage a search)
   (a) zero-control (*being* + time)
   Being Sunday, all the banks were closed (Kortmann 1991: 50)
   (b) verbal speech-act qualifiers
   Generally speaking, sitting judges are exempt from this.
   (c) deverbal prepositions and conjunctions
   Considering the circumstances, they did well.
   (d) imperative matrix clauses
   Holding the spoon tightly, scrape off the burnt remains.
2. Group 2 (6 factors that encourage a search)
   (a) Overt (2 factors)
      i. non-referential matrix subject (e.g., pleonastic *it* or *there*)
      Driving at 100 mph, it is not easy to read road signs. (modified from Kortmann (1991: 55)
      ii. matrix proposition as controller (these correspond to our summative PPPs, FPCs, and summative AdjP constructions)

Whenever possible, use the wooden mold as a pattern for cutting clay. (Bäcklund 1984)

(b) Covert (4 factors)

i. semantic clashes between subjects (animate–inanimate, etc.)

Driving to Chicago that night, a sudden thought struck me. (Quirk et al. 1985: 1121)

ii. cotext

Viola$_i$ was called to the stand. Once $_i$there, the DA would provide... (modified from Bäcklund (1984: 46))

iii. world knowledge[26]

Having paid our bill, the waiter brought our hats. (Visser (1972) as cited in Kortmann 1991: 62)

iv. position of free adjunct

(Playing with his badges), he came in from work, (playing with his badges), and found me at his box, (playing with his badges). (modified from Kortmann (1991: 63))

Kortmann (1991: 64-76) also lays out adjustments and guides that can be used to determine the controller. These are not clues in favour of or against a search; rather, they are rules of thumb that the hearer can use to find the controller under the assumption that the controller is located somewhere else.

[26]World knowledge can be defeated more easily than this example suggests. For instance, police officers are more likely to issue tickets than drivers and are also less likely to get caught going over the speed limit, but there is a strong urge to assign subject coreference in both of the following examples:

(i) ?After issuing the ticket, the driver scowled at the police officer.

(ii) ?Caught going over the speed limit, the police officer signalled the driver to pull over.

My opinion is that the adjunct *having paid our bill* is actually controlled by the perceiver (see section 3.2.1 on logophoricity). Neither the police officer in (i) nor the driver in (ii) can be considered a perceiver and so in both of those instances the choice that would make sense cannot override the subject coreference rule. The lack of context makes the anaphoric retrieval of a discourse entity impossible. Our world knowledge makes both of these sentences difficult to process as we attempt to construct a situation in which, for instance, a driver issued a ticket to a third party or a police officer was caught speeding and subsequently redirected attention to another driver. Ultimately we know that the speaker intended something different in uttering them.

1. Adjustments

   (a) Availability of controller in obliqueness hierarchy

   Cutting off her protest, there was a click as the caller hung up. (Kortmann 1991: 55)

   (b) Selectional restrictions of the head

   Sitting there quietly, the memory stirred him. (Kortmann 1991: 58)

   (c) Thematic role

   Looked at closely, she could see his face was really a rather fine one. (Kortmann 1991: 69)

2. Clue-providing guides

   (a) Possessive pronouns

   *voting on **their** conscience* (Stump 1981: 7)

   (b) Reflexive pronouns

   *watching **himself***

   (c) Position of the free adjunct (see Group 2's b.iv)

A great amount of this complexity can be ruled out by eliminating the other structures we have encountered in this chapter (e.g., deverbal Ps, PPPs, and FPCs). I also believe that Kortmann overlooks one of the most important clues favouring experiencer/logophoric control. The preceding cotext has more ways to provide salient entities for control than simply mentioning them. The cotext can also function to encourage speaker control by setting up a communicative scene based on impressions instead of facts about who did what to whom. Such impressions require an implicit perceiver to experience them, and that perceiver can control the adjunct. We will deal with this in greater detail in section 3.2, where we will see that we can emphasise the perceiver by **not** referring to her. But for now, we must determine how the above factors can be used to carry out a search.

Kortmann prefaces his account of the search process by claiming that very few free adjuncts are danglers (they account for under 10% of his corpus examples).[27] He does this to motivate the idea that listeners assume that the free adjuncts they encounter are related until they have evidence to the contrary. If this is true, waiting for counterevidence will allow listeners to cut down on unnecessary processing in search of other candidates. So the listener first attempts to match the free adjunct up with the matrix subject, and then, if things go wrong, he sets out in search of another controller. That is my understanding of what Kortmann thinks, in any case; the way in which he describes this process is not always consistent. There are a few ways to interpret what he says, so we will have to look at his claims as they were originally made:

> ... does the language user, in solving the control problem, match the referent of the matrix subject against the implied subject before any other possible candidate for the controller of the S_{FA} (Ed: free-adjunct subject) is considered because free adjuncts are standardly assumed to be of the related type? The only safe way of receiving a definitive answer to this question is detailed psycholinguistic research based on tests with a great number of informants. This lies far outside the scope of the present study, though. For the purposes of the present investigation, it must suffice to employ a necessarily purely introspective answer as a working hypothesis and structuring device for the factors to be considered in this section. The answer is a positive one: in processing free adjuncts, S_M-control (Ed: matrix-subject control) is taken to represent the default case; *the corresponding matching process, i.e., S_M against S_{FA}, is claimed to precede all other possible matching processes.* (Kortmann 1991: 48, my emphasis)

What is a 'matching process'? My initial guess, as I have said, is that it means what it seems to mean: the listener attempts to understand the free adjunct under the control of the matrix subject, which is impossible if the features of the subject do not match up with the demands of the verb. Any process of matching, for me, has to involve two items under comparison. But might the matching process include the consideration of clues that come before the matrix subject is available? After all, overt signals to rule out a related reading, such as Kortmann's group 1 and 2 overt factors, can arrive in a variety of places. Perhaps the matching process includes not only directly trying out the matrix subject as the controller of the free adjunct, but also considering other evidence within

[27] See p.222 for a discussion of why Kortmann might have underestimated the pervasiveness of danglers.

the adjunct against coreference.

That is, there is the primary evidence of an outright mismatch, such as when a semantic clash with the matrix subject encourages a subsequent search for a different controller:

(228) Driving home, the flags fluttered in the breeze.

Flags cannot drive, so (228) makes us consider other options. But there is also secondary evidence to consider. As we have seen, some adjuncts do not need control, such as those involving deverbal prepositions. This situation rules out the need for a search for a controller altogether:

(229) Considering the circumstances, Bob is doing pretty well.

The question is whether Kortmann thinks that ruling out subject control must wait until we encounter *Bob*. From this point on, I will distinguish two ways of interpreting what Kortmann has said. The 'strong' version of Kortmann's claim is that the first step necessarily involves the primary evidence of actually matching up the matrix subject as a potential controller for the free adjunct, while the 'weak' version is that the matrix subject can also be ruled out as a controller through secondary evidence before it actually occurs. In both versions, the recovery of non-subject controllers only starts when the default related interpretation is precluded.

It is necessary to maintain these two distinct versions, as Kortmann describes the process in ways that suggest different things at different times, making it difficult to determine which version is put forward:

> Two steps were claimed to be involved in processing free adjuncts with respect to their control properties. In a first step, *the matrix subject is matched against the underlying* S_{FA}; if subject-identity is *precluded*, then, in a second step, one tries to recover the controller from information provided in other parts of the matrix clause or the immediate cotext. For the overwhelming majority of free adjuncts, i.e. the related ones, it suffices to match the subjects against each other, rendering step 2 unnecessary. (Kortmann 1991: 53-54, my emphasis)

Here, the 'strong' version seems to be the one on offer; he is very explicit about the match of subject against subject being the first step. But the term *preclude* seems to imply

that the match is ruled out in advance by other information; a term like *unacceptable* would have made it clear that the clash was the result of the match attempt. And indeed, he provides several ways of precluding coreference that do not require the processing of the matrix clause, including the presence of deverbal prepositions and the necessity of pleonastic *it* as the understood FA subject (Kortmann 1991: 49-53). He does seem to have adopted the 'weak' position a few pages later:

> It needs to be stressed, however, that when dealing with these factors within the frameworks of, broadly speaking, indicators of unrelatedness first and relevant factors for the identification of the underlying S_{FA} next, no claim is made as to whether this sequence is of cognitive relevance. In other words, it is neither the case that the process of selecting the controller is regarded as consisting of a fixed sequence of two matching operations ("S_M against S_{FA}" first, "other possible controllers against S_{FA}" second) nor even that this process necessarily involves two steps at all. The latter was only suggested as a working hypothesis in the true sense of the word, viz. to make the problem of control a more workable one. All that is claimed here is (i) that the underlying indicators of non-S_M-control give rise to expectations on the side of the language user as to which properties the potential controller of a given free adjunct must meet, and (ii) that it is against these necessary requirements that the various candidates for controllership which the matrix clause or the cotext may offer are judged for their appropriateness. (Kortmann 1991: 56-57, my emphasis)

This passage problematizes everything that we have seen so far. Two separate sequences described as if they referred to the same process:

(230) a. Consider indicators of unrelatedness.

b. Consider clues to the identity of the controller.

(231) a. Consider the matrix subject as a potential controller.

b. Consider other potential controllers.

If these are the same for Kortmann, then we can choose the 'strong' version: unrelatedness is indicated from attempting to resolve the FA as controlled by the matrix subject. But if we take the last sentence of his paragraph at face value, Kortmann is merely stating that any factors precluding subject control can set requirements that determine how subsequent clues leading to the controller are used (i.e., that all clues are used together). He disavows any cognitive relevance of his assumed sequence(s), but here and in subse-

quent publications, he continues to speak of the search process as though it did have two ordered steps:

> Where the free adjunct demands, for instance, an animate controller, but the referent of the matrix subject is inanimate or abstract [. . .] subject control is immediately precluded and a semantically appropriate controller selected. (Kortmann 1995: 208)

Here, if subject control is precluded by an animacy clash, then the match must have already been attempted before the semantically appropriate controller is selected. It is not clear if that means that these controllers have been searched for and collected already, or if it requires that search to begin in the first place.

There is another problem. If Kortmann is taking the 'strong' approach, he does so to preserve computation: if most free adjuncts are related, then why would we calculate coreference before seeing if the matrix subject will have what we are looking for? But that assumes that free adjuncts can be immediately distinguished from other constructions.

As we saw in section 2.3, bare free adjuncts and gerundive subjects look the same at first. A completely different search mechanism would have to be in place already to account for the looser sort of control we see in gerundive subjects: there is general agreement that the control of gerundive subjects requires a non-syntactic approach (Landau 2013: 230ff.).[28] These sentences cast doubt on the idea that other types of control cannot be entertained until evidence of unrelatedness arrives—such a suspension assumes that the listener can somehow differentiate gerundive subjects from free adjuncts even at an early stage.

But the key weakness of Kortmann's approach, if the 'strong' interpretation is correct, is that it does not directly take into account the incremental way in which sentences are generally thought to be processed. Psycholinguistic studies have repeatedly found that the parser uses all available material as soon as possible, including semantic context (Traxler & Pickering 1996), discourse context (Altmann & Steedman 1988), and visual context (Tanenhaus et al. 1995). Kortmann seems to touch on this twice.

[28] Some, including Boeckx & Hornstein (2007: 256ff.), depart from this view. See footnote 3 on p.112 for details.

(232) a. (Claim 1) Information presented in the preceding cotext, for instance, may lead to an immediate identification of the underlying subject, and therefore render a processing of the matrix clause in search of a controller unnecessary right from the start. (Kortmann 1991: 47-48)

b. (Claim 2) S_M-control may be prohibited by information which the language user can retrieve outside the complex sentence, i.e. in the first place in the preceding cotext. (Kortmann 1991: 60)

These claims seem to anticipate much of my criticism, but then why is his proposed apparatus still in place? We need to be very precise about his wording in order to interpret these claims as coherent with the rest of his proposal.

Claim 1 states that the cotext may provide a controller before the matrix clause is processed for possible controllers (something I believe to be true, although I would change 'may provide' to 'by default provides'). It does not state that the cotext can provide a controller before the matrix subject is considered as a controller (something I also believe to be true, as garden-path danglers involve a non-clashing subject disruptively overriding an assumption previously arrived at). The emphasis, again, is on saving processing effort. That is, claim 1 suggests the following order: match the matrix subject against the FA subject, consider the cotext for potential controllers, then process the matrix clause for less accessible controllers.

If I am wrong in this interpretation and Kortmann believes that cotext does rule out the default relatedness assumption, then none of his other statements mentioned earlier concerning preclusion of relatedness leading to recovery from cotext makes sense. They would be circular in that preclusion of relatedness causes recovery of a controller from cotext, which in turn causes preclusion of relatedness. The only way to square claim 1 with his other statements is to posit that relatedness is precluded first, which causes the hearer to process the cotext for a controller, the discovery of which in turn rules out subsequent processing of the matrix clause for non-subject controllers (and not the default relatedness assumption).

But this more generous reading is directly contradicted by Claim 2, which explicitly

states that information in the cotext can rule out the default subject control rule. It is not clear how subject coreference can be prohibited by cotext; the processor generally makes an attempt unless a deverbal preposition is involved (and these are within the adjunct itself, not in the cotext). And it is not clear whether Kortmann is referring to clues or to successful matches with cotext. But in any case, the strategy is not internally consistent.

Again, in my view the only way through is to take a strictly incremental approach involving multiple attempts at finding a suitable controller (in the loose sense of the word). Cotext and context would both be utilised immediately to make a first guess, but the default assumption of relatedness would still hold. What happens when the first guess and the assumption of relatedness interact is what causes the variety of acceptability.

By contrast, Kortmann's stages don't involve multiple guesses at a controller, but rather an attempt at subject resolution that, when it fails, is followed by an attempt to determine a suitable controller. The second of these stages occurs only some of the time. In Kortmann's (1991: 53f.) words, "for the overwhelming majority of free adjuncts, i.e., the related ones, it suffices to match the subjects against each other, rendering step 2 [Ed: a recovery of the controller from information in the cotext or non-subjects in the matrix] unnecessary". His account therefore requires a suspension of cotext processing, something I have argued is contrary to the way the brain is generally agreed to process all available data, linguistic or otherwise.

That all said, the control clues that Kortmann assembles are fundamentally sound, and will form much of the foundation of my proposed analysis. I am in complete agreement that the hearer uses evidence from syntax, semantics and pragmatics to come (eventually) to one conclusion or another. Kortmann's work shows just how complex the question of adjunct control resolution is, but it does not provide a plausible way to implement that psychologically.

2.5 Summary

In this chapter, we have seen that there are many constructions that are similar to bare free and bound adjuncts and are therefore easy to confuse with them. We can use *while* as a diagnostic tool: when we make bare adjuncts full, we are less likely to be confused by ambiguity. Prepositions like *while* are more suited to this purpose than prepositions like *after* are because they force their complements to be predicative.

When free adjuncts appear in initial position, there is a processing cost for the hearer but an advantage in the establishment of discourse coherence. This position forces adjuncts to be understood before their matrix clauses, which suggests why some adjuncts can escape local controllers more easily than others.

We should question any approach to adjunct control that relies on a trigger for a search for non-standard patterns. Unrelated adjuncts do not invariably cause difficulty; many are unnoticeable. On the other hand, even related adjuncts can surprise us with their control patterns.

I will continue to support and develop these ideas over the rest of this dissertation. For instance, we will see in section 4.1 that the hearer's job does not necessarily get easier when there is a readily available controller. It is better to think of adjunct control as involving not a choice of controller but rather a choice of strategy. The generative accounts we are about to consider all emphasise that approach to some extent, but they fall short in other ways.

Chapter 3

Theories of control

We have seen that free adjuncts (and several related constructions) lack a local subject. The same is true of many nonfinite phrases with a variety of functions. In some cases, these understood subjects can be interpreted rather freely, while in other cases, things are more restricted.

(1) a. Alice thought that $_{arb}$singing a song might improve John's mood.

b. Alice thought that $_{j}$lifting weights might improve John's$_{j}$ physique.

c. Jane$_{j}$ wanted to $_{j}$buy some milk.

d. Jane$_{j}$ said to $_{*j}$buy some milk.

e. Jane expected Bob$_{b}$ to $_{b}$buy some milk.

f. Jane$_{j}$ promised Bob to $_{j}$buy some milk.

The collection in (1) shows us that even sentences with apparently very similar structures can encourage the reader to look in different places for the subject of the nonfinite phrase. How do language users come to the same conclusions about these subjects most of the time? This is the central question that has spurred over 50 years of research into the study of control. The history and findings of this research have been explained lucidly many times over (Larson et al. 1992: vii-xii,, Lyngfelt 2009a, Landau 2013, Kiss 2015, Panther 2015, *inter alia*).

Most studies focus on complement control, which is not central to our discussion, but the proposals these researchers put forward have provided tools that have been used to

explain adjunct control, so I must provide a brief (and partial) account of that field first. When we turn to adjunct control, we will see that the default case, subject control, is fairly straightforward for syntactic accounts, but these researchers must also determine when and how adjuncts establish non-subject control, which is where their answers differ in ways that are of interest to us.

In broad terms, there are two places in which adjuncts are thought to look for non-subject controllers: salient perceivers (logophoric control) and salient referents (topical control). Most researchers have emphasised the former at the expense of the latter. I will instead side with Kawasaki (1993: 158-203) and Adler (2006: 65-103) in favour of topical control. Logophoric control, I argue, is a special type of topical control that involves the ever-present participants in the speech act, which include generic controllers and, in the case of modernist prose, characters with whom the narrator empathises.

All types of topical control are set up by the preceding discourse, which we rely on when the adjunct is initial. When we see a sentence with an initial dangler in an artificially isolated setting, we can use elements of the ensuing matrix clause to guess at the discourse topic, but this is a last-ditch effort in a highly unusual situation. Danglers rarely start off discourse; instead, we encounter them in the middle of ongoing text. In these cases the matrix clause functions more to confirm the topic than to establish it. We will also look at adjuncts apparently controlled by implicit agents. Our conclusion will be that these are actually controlled through the same topic-tracing mechanism – what seems to be an implicit agent providing control is actually the matrix clause failing to present a suitable competitor for control.

Finally, we will consider the specific proposals found in two modern generative approaches to control, Hornstein's **Movement Theory of Control (MTC)** and Landau's **Two-Tiered Theory of Control (TTC)**. Hornstein ties control to the very specific mechanism of Sideward Movement (Nunes 1995), which limits the flexibility of his theory. Landau, on the other hand, pins his theory to an empirically inadequate conception of danglers as necessarily involving logophoric control (after Williams (1992)). I will end with Green (2018), an attempt to combine the insights of these theories.

3.1 Control of complements

3.1.1 The foundations

The study of how nonfinite verb phrases are associated with implied subjects is usually said to date back to Rosenbaum (1965)[1]. His approach was to treat control syntactically as a type of ellipsis involving a set of identical NPs referring to the same entity, all but the uppermost of which are deleted (2a,b). This chain must not be interrupted by another NP, as (2c) demonstrates.

(2) a. Jane expected ~~for Jane~~ to win.

b. Jane expected Bob ~~for Bob~~ to win.

c. *Jane expected Bob ~~for Jane~~ to win.

This pattern is stipulated in the erasure principle of Rosenbaum (1965: 10) (later, the Minimal Distance Principle (MDP) (Rosenbaum 1970: 10f.; C. Chomsky 1969)). It predicts that intransitive verbs should entail subject control of the embedded clause, while transitive verbs should entail object control.

Rosenbaum's deletion-based account was found problematic for a variety of reasons,[2] and so the relationship with the nonfinite VP was typically reinvisioned as one of control, or coreference with a null pronoun (first Postal's (1970: 458) 'Doom', and then N. Chomsky's (1973) PRO). That is, nonfinite phrases have covert syntactic NPs that are subject to binding.

There is another prominent issue with Rosenbaum's account that continues to divide accounts of control. Rosenbaum himself acknowledged that, against his predictions, the verb *promise* involves not object but subject control.

(3) I promised John ~~for me~~ to bring the money. (Rosenbaum 1965: 121)

[1]Kiss (2015: 1324f.) points out that Rosenbaum (1965) is in fact predated by Bech's (1955/1957) study of control in German

[2]Landau (2013: 6ff.) presents a collection of issues with deletion-based accounts, including the observation reported in McCawley (1998: 127f.) that *Every contestant expects to win* cannot be understood as meaning that everyone expects that everyone will win (instead, the quantification works out in the same way as it would for an explicit pronoun (*Everybody expects he will win*)).

Despite this problem, the fundamental concept of an uninterrupted chain leading to a controller would come back to inform several syntactocentric theories of control, the most prominent of which is Hornstein's (1999) Movement Theory of Control. In his analysis, Hornstein (1999: 83-90) uses a rebranded version of Rosenbaum's MDP that employs the terminology of N. Chomksy's (1995) Minimal Link Condition to the same end. A fuller consideration of Hornstein's theory will have to wait until section 3.3; for now it is sufficient to point out that it still decides control relations by syntactic distance.

Any theory of control has to deal with variation in how coreference is determined. A distinction is usually made between **obligatory control (OC)**, the local syntactic relation that we have been discussing so far in this chapter, and **non-obligatory control (NOC)**, which allows for a broader range of controllers. The dividing line between OC and NOC has changed somewhat since NOC first arrived in Williams (1980: 208ff.). There, OC was defined as control by a local antecedent that preceded and c-commanded the verb needing control, and that relationship had to be unique. NOC was used for all other cases, including arbitrary reference in sentences like (4a) and uniquely determined coreference in sentences like (4b), in which *Bob* does not c-command but is the only element that can control.

(4) a. To forgive is divine.

b. I am counting on Bob to perjure himself.

Since then, OC has expanded to include relations like that in (4b): what is important is that the uniquely determined controller is an explicit part of the local structure. NOC has correspondingly shrunk to include only those instances of control that are resolved generically or anaphorically like (4a). An example of this is the control of subject clauses, in which coreference is determined through pragmatic means.[3] The controller need not

[3]The relevant literature starts with 'Super-Equi NP Deletion' in Grinder (1970). There is general agreement that this is NOC, but see Hornstein & Kiguchi (2003) for an argument that sentences like *Eating onions pleases Bill* exhibit OC thanks to Sideward Movement. This argument is dismantled by Landau (2007: 313-317) but nevertheless cited by Boeckx et al. (2010: 211) without a response to Landau's criticisms. One possible counterexample is *Eating onions tidily pleases Bill*—Bill no longer necessarily controls *eating onions* because the addition of the adverb *tidily* suggests that he is happy when others don't leave onion peel on the counter.

appear in the same sentence, as illustrated with (5a). Indeed, it can be completely absent: (5b) is grammatical on its own.

(5) a. Mary$_i$ was happy and excited. To $_i$have involved herself in the group was a risky action. (Bresnan 1982: 381)

b. $_{arb}$Attending class consistently is a good idea.

Some generativist researchers have claimed that the controllers outside of OC must be human or logophoric perceivers (Manzini 1986: 330-332; Williams 1992: 297f.; Landau 1999: 203-206; Landau 2013: 232). This idea will be treated in section 3.2.2, but for now I will say that [+human] controllers might be preferred in NOC, but they do not seem to be strictly necessary:

(6) In 5 billion years, the sun$_i$ will become a red giant. $_i$[Turning/To turn] into a supergiant would require much more mass.

The sun is clearly [-human], yet the relationship here seems to involve NOC, as it is regulated by discourse context, not syntax. In the absence of that context, the sentence can be interpreted with arbitrary reference.

In any case, there is general agreement that NOC is not resolved syntactically. Where linguists differ is in what restrictions are placed on the possible controllers and where the OC/NOC divide is located.

3.1.2 Subject-control *promise*

Let's return to OC for now and examine *promise* more closely, as it has continued to be the centre of significant contention since Rosenbaum first brought it up. It is one of the most prominent stumbling blocks for syntactic theories of control that rely on distance alone. While it is interesting that *promise* is naughty, the real reason we must pause here is not to examine that word's behaviour but rather to observe the ways in which syntactic accounts of control attempt to tame it and account for broader patterns across different constructions. After all, when we turn to adjunct control, there will be many

more instances of naughty control to deal with.

Syntactic theories mostly react by treating *promise* as an exception. Some support for this move came from an informal survey by Courtenay (1998) that found that only 38% of English speakers accepted the sentence *I promised Kris to buy the cat food*, with the rest instead preferring other formulations such as *I promised Kris that I would buy the cat food*. Boeckx and Hornstein (2003: 273, 2004: 440) took Courtenay's findings up with particular enthusiasm, claiming that the marginal status of subject-control *promise* supports a syntactic approach. If we treat *promise* as an irregularity, they say, we can explain why it causes difficulty for so many language users.

I agree that *promise* is an atypical verb in its control patterns. The subject control that *promise* involves takes a particularly long time for children to master, as C. Chomsky (1969) showed in her dissertation. But I am not convinced that this means that these control patterns can be written off as marginally acceptable. It has an established history of being used in this way:[4]

(7) a. Will ye$_i$, said Sir Gawaine, promise me to $_i$do all that ye may, by the faith of your body, to get me the love of my lady? (Malory *Le Morte d'Arthur* (1485))

b. Our company$_i$ with one voice thanked me for my good admonition, and promised me to $_i$live soberly and civilly, and without giving any the least occasion of offence. (Bacon *New Atlantis* (1626))

c. He$_i$ promised her to $_i$soften his behaviour (Defoe *Moll Flanders* (1722))

d. I$_i$ promise you to $_i$make none for myself, papa; but I must, indeed for other people (Austen *Emma* (1815))

e. You$_i$ must promise me to $_i$stop throwing quills at people. (Baum *The Patchwork Girl of Oz* (1913))

f. Will you$_i$ promise me to $_i$be careful from now on? (Movies: *Mr. Deeds Goes to Town* (1936))

[4]The reading in which *promise* takes object control, on the other hand, is rare:

(i) I can't promise you$_i$ to $_i$walk, but I can keep you alive. (Movies: *Flashfire* (1994))

g. I_i promise you to $_i$keep it quiet, sir. (TV: *Colombo* (1992))

h. Just promise me to $_{addressee}$drop her over the side when you're done. (Movies: *Quantum of Solace* (2008))

If *promise* is problematic for young speakers, it can still be accounted for within a semantic approach: children might make a false generalisation about control patterns at an early stage that they discard when they become sensitive to semantic points like who is responsible for carrying out a given action and who benefits. *Pace* Boeckx & Hornstein, syntax usually has a hard time dealing with this sort of gradient acceptability in a way that semantics does not, particularly when it comes to movement. It is also worth noting that *versprechen*, German for *promise*, occurs regularly with matrix objects and still exhibits subject control in an apparently unproblematic way, as was pointed out by Panther (2015: 829). Panther & Köpcke (1993) go into detail about the difference between English and German control, both of which are argued to be gradient phenomena as the result of conflicting principles guiding referent choice.

That means we should look even more closely at how Boeckx and Hornstein look for a way for the syntax to handle *promise*. They might have simply stipulated it as a lexically marked exception (this is precisely what Bresnan (1982: 403) does), but their answer is instead to appeal to general principles: they tuck the postverbal NP into a PP headed by a preposition that is either null or deleted at PF. This allows the chain to continue uninterrupted to the subject (Boeckx & Hornstein 2003: 272-274, Hornstein 2003).[5] I can certainly imagine that this mysterious PP would be difficult for children to acquire.

In any case, even visible PPs in this position show varying control (Davies & Dubinsky 2004: 360; Culicover & Jackendoff 2005: 432fn7):

(8) a. Sally$_i$ vowed [to Harry] to $_i$pay for the damage.

b. Sally depended [on Harry$_i$] to $_i$pay for the damage.

If PPs are invisible to the chain as a rule, as Boeckx and Hornstein seem to suggest, then why does Harry have to pay for the damage in (8b)? If only Ps that are null or deleted

[5] A similar explanation is used for control shift later in Boeckx et al. (2010: 176-182)

can allow control to skip to the subject, then why does Sally have to pay for the damage in (8a)? And why does subject control not arise in the cases of transitive *teach* or *tell*, both of which seem amenable to a similar hidden PP interpretation and yet involve object control (Landau 2013: 153)?

(9) a. Bob taught Sally$_i$ to $_i$tie her shoes.

b. Bob told Sally$_i$ to $_i$tie her shoes.

Of course, there are other ways to handle *promise* within a control theory that relies on syntax. For instance, Landau (2015) posits a second type of OC involving logophoric control of nonfinite complements of attitude predicates. We will come back to this in section 3.3.2; as I said at the beginning of this section, my primary reason for going on at length about *promise* here is not to examine its properties, but to see how Hornstein handles the problems it poses for a movement-based account.

Let us instead turn to one of those problems: we cannot set aside the control patterns found with the verb *promise* as an exception, because these patterns are identical to those in completely separate syntactic situations that involve the noun *promise* (Jackendoff 1972: 217ff.; Sag & Pollard 1991: 64). This is as we would expect if subject-control *promise* results not from a lexical exception, but from the semantic meaning of *promise*. The exact matrix verb used with the noun (*give*, *get*, *make*, etc.) becomes relevant, as the question is now the semantic one of who issued the promise.

(10) a. John$_i$ gave Susan some sort of promise to $_i$take care of himself/*herself.

b. Susan got from John$_i$ some sort of promise to $_i$take care of himself/*herself.

c. John$_i$ made Susan a promise. What was it? It was to $_i$take care of himself/*herself. (all from Culicover & Jackendoff (2005: 434))

In the same way, the verb *command* also follows the same patterns as the corresponding noun. In all cases, it is the person who receives the command who goes.

(11) a. I commanded Bill$_i$ to $_i$go.

b. I gave Bill$_i$ a command to $_i$go.

c. I_i received from Bill a command to $_i$go.

Verbs and nouns follow the same generalisation, so why do the verbs need their own syntactic account?

Boeckx & Hornstein (2003: 275-277) respond by saying that verbs and nouns do not actually pattern together because control within NPs is fundamentally different. They explore the possibility that all instances of control within NPs actually involve NOC that happens to result in the same control patterns as verbal OC. That would mean that the similarity between, for instance, the control patterns in the NP *his promise to lower taxes* and in the sentence *he promised to lower taxes* is coincidental. Under their proposal, only the latter involves OC.[6] They support this distinction through examples they say illustrate the thematic differences between nouns and verbs. I will take issue with those examples here. The structures might be only loosely related to the central questions of my dissertation, but the underlying inflexibility of a movement-based theory of control is important. Their theory's weakness here, that its mechanisms only work in a narrow range of situations, will become more relevant when we see in section 3.3 that the same problems arise for its treatment of adjunct control. And the idea of discounting problems as NOC will come up again, too, when we look at the control differences between *after* adjuncts and *while* adjuncts.

First, Boeckx and Hornstein claim that *by*-phrases in nominalisations demand an agentive reading that is not required when dealing with a verb. I take them to mean by this that the event is brought about in an intentional way by a sentient entity. That doesn't seem to be true; none of the causers in (12) is sentient.

(12) a. destruction of the environment by (the railroads/an outworn technology in the grip of mindless greed) (iWeb)

b. destruction of the Earth by (flood/fire/capitalism)

Next, they claim that idioms cannot survive nominalisation, but this does not seem to be true either. The nominal counterpart of *letting the cat out of the bag*, the first example

[6] If my analysis in section 2.2.7 of some full free adjuncts as actually selecting verbal gerunds is correct, then these would presumably also involve only NOC.

they provide, was easy enough to find with a search for *letting of the cat*.

(13) a. **This letting of the cat out of the bag** is not very judicious. (The Spectator (1899))

b. That had been **a stupid letting of the cat out of the bag** (Eichard Burton (1898) *Literature for Children*)

Their ban on idioms extends to the noun *arrival*, which they say cannot have the extended meaning of 'success' that is found with the verb *arrive*. But there is plentiful evidence against this:

(14) a. It was conceived in her London council flat in 1998, and its **arrival** was heralded by the art world. (BBC News (2017))

b. Debussy's **arrival** to fame also sparked a cult (WEB)

c. [It was] only two years into her **arrival** as an actor (Wikipedia)

d. She was the great **arrival** of the season (Ouida (1876) *In a Winter City*)

Finally, in (15) I will reproduce a contrast that Boeckx & Hornstein (2003) use to illustrate what they thinks is a differing potential for split antecedents that depends on whether a nominal (15a) or sentential (15b) domain is involved. The asterisk placement is theirs; any distinction here is slight for me.

(15) a. John approved Bob's **attempts** to sneak ⌊each other/themselves⌋ into the party.

b. *John approved of Bob's **attempting** to sneak ⌊each other/themselves⌋ into the party. (both from Boeckx & Hornstein (2003: 277); their judgments)

All of Boeckx and Hornstein's examples were meant only to undermine assumptions of continuity between nouns and verbs in terms of thematic relations; none addressed Culicover and Jackendoff's concerns in a head-on way. So Boeckx & Hornstein (2003: 278) also consider the possibility of OC within nominals, which would have to involve "some kind of movement" restricted by assumptions internal to their theory (specifically, the movement must occur "as a reflex of θ-role checking").

3.1.3 Control shift

I will finish this section with some additional evidence that a strictly syntactic approach is inadequate for complement control. We have seen that semantic approaches to control suppose that control relations instead fall out of the meanings of the verbs that are involved. These approaches also seem well-suited to dealing with some other complications to the usual control patterns that have arisen. Consider the verb *ask*, which usually involves object control:

(16) Bob asked Sally$_i$ to $_i$go to the store.

When we know nothing of Bob and Sally's relationship or what going to the store involves or who will benefit, we take the default reading as unproblematic. But these control patterns can, at least potentially, shift based on our pragmatic knowledge of the parties involved and whom a given action is likely to benefit:

(17) The pupil$_p$ asked the teacher$_t$ to $_{p,t}$leave early. (Farkas 1988: 47)

The traditional reading, of course, is still there (in which the pupil wants the teacher to go), and for many speakers, including me, it remains the only option. But it is relatively easy to find attested sentences that can be understood only by taking world knowledge into account:

(18) a. I$_i$ have to ask my boss to $_i$go home because of a "migraine"... (iWeb)

b. When I was 8, I$_i$ was afraid to $_i$ask my mom to $_i$go pee so I just held it. (iWeb)

c. I thought it was serious so I$_i$ got up to $_i$ask the teacher to $_i$go to the nurse... (GloWbE)

These examples (see Farkas (1988), Sag & Pollard (1991), and Pollard & Sag (1994) for more) present serious problems for configurational approaches to control: Boeckx et al. (2010: 177ff.) have to resort to their invisible PPs again. But the problems are less serious for semantic accounts like Culicover & Jackendoff's because that sort of analysis does

not limit control to the semantics; the argument is rather that semantics fundamentally determines control but can be coerced (Culicover & Jackendoff 2005: 451-9).

This is an important point, because if control were determined entirely by the semantics of the matrix verb, then not much could be said about adjunct control, which does not involve selection. But if pragmatics has a role to play, as argued in Panther & Köpcke (1993), Landau (1999: 84ff.), Panther (2008), and Duffley (2014), then there is no need to relinquish everything to syntax when exploring how adjunct control that flouts the subject coreference rule can arise.

3.2 Control of adjuncts

Before we start, recall the fact that complements can be controlled by either the subject or the object. For instance, in both of the following sentences, the complement *to go home* is controlled by *Bill*.

(19) a. John told Bill$_i$ to $_i$go home.

b. Bill$_i$ was told by John to $_i$go home.

There are two main ways to understand complement control. In syntactic accounts that use a version of the MDP, *Bill* blocks control from *John* in (19a), but *John* is not in a position do the same thing to *Bill* in (19b). In semantic accounts, on the other hand, the entity with a particular thematic role is picked out regardless of the information structure of the matrix clause. That is, the controller in (19a,b) is *Bill* in both cases because he is the person on the receiving end of the telling.

But as we have already seen, adjuncts seem to be controlled by the subject regardless of matrix voice, at least in the default case.

(20) a. John$_i$ greeted Bill when $_i$arriving.

b. Bill$_i$ was greeted (by John) when $_i$arriving.

This is good news for syntactic accounts. If adjuncts always look to the same structural position, a structural account seems to be the best way to explain that.

Some other types of control have been claimed to be ruled out. Lyngfelt (2009a: 40f.), for instance, claims that arbitrary control is not available for adjuncts like these, which require a specific controller. But it seems that arbitrary control is possible in at least some adjuncts, usually because it inherits that arbitrary control from the clause to which it is attached (21a), but not always (21b).

(21) a. In a formal table setting, the service plate comes with each course, so it is not necessary to include it when setting the table. (WEB)

b. Dither is not necessary when using resolutions that are high enough. (iWeb)

Then there is the matter of object control. Object control does appear to be attested for adjuncts like those in (22).

(22) a. The FBI caught him$_i$ after $_i$attempting to sell two stolen Picasso etchings. (WEB)

b. A dump truck backed up over him$_i$ while $_i$working on the eastbound side of I-4. (iWeb)

c. A background in various preprocessing languages and database environments has served him$_i$ well while $_i$working with Interfolio (modified from iWeb)

d. An affinity for litigation served him$_i$ well while $_i$participating in moot court competitions as a second-year law student

e. After $_i$showing flashes of power in his 1997 rookie season, the Rangers traded him$_i$ to St. Louis as part of a five-player deal in '98. (iWeb)

But the fact that the object is coreferential with the adjunct's understood subject might be coincidental. We will come back to consider this problem later in our discussion of logophoric and topical control in sections 3.2.1 & 3.2.2.

Let us instead look at answers to the question of why adjuncts are almost always controlled by the subject. Syntactic accounts often claim this falls out from the adjunct attaching higher up, outside the VP. The subject would then be the closest c-commanding NP; the object would be invisible. But any syntactic account will need a way to answer two other questions as well. When can adjuncts be controlled in unexpected ways (i.e.,

when can they dangle)? And how is that sort of alternative control resolved?

The semantic accounts intuitively feel like a good place to look first. We have seen that extrasentential controllers are possible for free adjuncts, and this might seem to encourage a theory of control not based in syntax. However, we actually run into difficulties here. By relying on thematic roles to determine the controller in OC, a purely semantic account gives itself little to say about subject-control for adjuncts, which are not selected by the matrix verb and therefore have nothing to do with its lexical semantics. After all, the subject is the controller in both of the following examples, regardless of the lexical semantics of the matrix verb:

(23) a. $_i$Leaving the building, John$_i$ promised Bill to phone.

b. $_i$Leaving the building, John$_i$ asked Bill to phone.

Culicover & Jackendoff (2001: 502-504) acknowledge this difficulty; they see adjuncts as obligatorily controlled by the subject (in most cases, at least), and so syntax must be involved with control to some extent. They simultaneously claim that syntax cannot determine adjunct control on its own because *-ing* adjuncts can be situated within NPs:

(24) [Such a brutal interrogation of the suspect without considering the legal repercussion] could lead to disaster. (Culicover & Jackendoff 2001: 503)

They say that the determiner rules out a space for a null subject for *interrogation* to serve as controller.[7]

Most people who have treated adjunct control in depth assume a theory of control based in syntax. As the rest of this chapter engages with this work, let us temporarily make the same assumption so that we can deal with their work. The control we eventually arrive at will incorporate some syntax as well, but it will place considerable emphasis on discourse-based anaphoric control.

When non-subject control is acknowledged in the literature, it is nearly always accompanied by the observation that its acceptability varies. There have been several proposals

[7]Landau (2013: 204) says that modern generative views of nominal structure are sufficiently articulated to support PRO even in the presence of a determiner.

for restrictions on controllers for dangling adjuncts: [+logophor] (in which the controller is the perceiver or experiencer), [+human] (in which nonhuman animals and inanimate objects are ruled out), and [+topic] (in which anything goes so long as it is sufficiently established prior to the dangler). These restrictions have appeared in several proposals, sometimes together. Occasionally, what appears as a restriction in one account turns up as a preference in another.

We will examine each in turn and see how the last of these, [+topic], is the best characterisation, and the other two can be subsumed under it. Humanity and logophoricity are clearly inadequate in the face of [-human] controllers: a lump of coal cannot experience anything, but it can control a dangler. Humanity is a preference because we like to talk about humans, and logophors are popular dangler controllers because the experiencer is always present and does not need to be established as a topic in the same way that a lump of coal does.

We will then turn to implicit agent control (IAC), which has sometimes been put forward as a way to explain why danglers like *This job is performed while standing at a desk* are so acceptable, and see evidence that these danglers might be more acceptable simply because the matrix clause gets out of the way.

3.2.1 Logophoricity

I have made frequent mention of logophoric control, a way to explain some acceptable danglers. We can now examine it more thoroughly. Some adjuncts are understood as controlled by a person who is understood to be on the scene in some way. In many cases, this is the narrator (25a), but it can also be another experiencer of what is described in the matrix clause (25b).

(25) a. $_{exp}$Standing here in the epicenter of pre-Christmasism, $_{exp}$laden with shopping bags of merchandise that proves my worth both as a provider and conspicuous consumer, a nagging thought intrudes: Is this the way I want to spend my leisure time? (AMZ: William Safire in the Pittsburgh Post-Gazette)

b. After $_{exp}$waiting at home every morning for a fortnight, and $_{exp}$inventing every evening a fresh excuse for her, the visitor did at last appear... (Austen (1813) *Pride and Prejudice*)

This logophoric control is available side-by-side with normal subject control, something that is made clear in the following pairs of adjuncts. In each case, the second sentence exhibits control by the experiencer.

(26) a. The bell$_i$ broke while $_i$being rung for the funeral of John Marshall.

b. One of them broke while $_{exp}$trying to install it. (both modified from iWeb)

(27) a. The car$_i$ was finally sold after $_i$being on the market for a year.

b. The car was finally sold after $_{exp}$bringing it to a dealer.

(28) a. These headphones$_i$ are designed to look and sound great while $_i$providing a secure fit.

b. Those springs all looked good while $_{exp}$cleaning the exhaust valves. (both modified from WEB)

I find these impeccable, particularly when they are placed in context. Whatever our theory of adjunct control is, it must have a way of admitting this type of resolution.

Williams (1992) was one of the first generativist studies to consider danglers like these, arguing that the subject coreference rule did not matter if the adjunct could be understood through logophoric control. What exactly counts as logophoric? Williams bases his account on Sells (1987: 445),[8] which characterises logophoricity as a conflation of three roles: the person from whose physical point of view the report is made (PIVOT), the intentional agent issuing the report (SOURCE), or the person with respect to whose mental state or consciousness the report is made (SELF). But in all of these cases, a logophoric controller must be a human capable of producing thoughts or feelings to be reported by the sentence. This controller has been argued to be represented syntactically: Landau (2015: 43) locates it in functional structure projected above the clause. We will

[8]See Reinhart & Reuland (1991) for an argument that Sells (1987) is an incomplete characterisation of logophoricity.

examine this in greater detail when we consider his Two-Tiered Theory of Control in section 3.3.2.

Williams (1992: 301f.) noted that a logophoric reading was easier to get when the adjunct was initial and prosodically detached, but harder to get when OC was possible. These conditions hold for both of the sentences in (29), and yet there is a difference in their acceptability because of the meanings of the matrix clauses. In (29a), Bill's inner thoughts are being reported (*seemed to Bill*), while in (29b), Bill's situation is being described in a relatively objective way that does not necessarily involve his perceptions, which is why logophoric control is argued to be unavailable.

(29) a. Having just arrived in town, the main hotel seemed to Bill to be the best place to stay.

b. *Having just arrived in town, the main hotel collapsed on Bill. (both from Williams (1992: 299))

If the understood subject of the adjunct is necessarily inanimate and therefore cannot serve as a logophoric centre, the relation must be OC by the matrix subject (30a), and so Williams argues that a dangler like (30b) should stand out as particularly bad.

(30) a. The car$_i$ was repaired several times while $_i$in the possession of the mafia.

b. *John repaired the car$_i$ several times while $_i$in the possession of the mafia. (both from Williams (1992: 300))

The logophoric centre can be an implicit argument of the matrix verb (31a), but this is not necessary (31b), so long as the existence of that centre is necessary to understand the matrix clause:

(31) a. $_{exp}$Having just arrived in town, the new hotel seemed like a good place for a stop. (modified from Williams (1992: 300))

b. $_{exp}$Having travelled all day, the hotel was a vision indeed. (Williams 1992: 300)

However, Williams does admit that this does not account for all of the data, providing the

two examples of apparent inanimate NOC in (32). Because the controllers are inanimate, a logophoric interpretation is necessarily precluded.

(32) a. Having run smoothly for years, it was finally time for my car to be serviced.
b. The train has a track to run on. (both from Williams (1992: 309))

He attempts to salvage the analysis by claiming that these sentences actually express the 'point of view' of the car and the train, respectively, which are perhaps inherent to the constructions involved ('time for X to' or 'X has'). He admits that the precise conditions for grammaticality are not clear to him.

To me, the sentences in (32) do not seem to involve the perspectives of the vehicles involved but rather those of the narrators, who are judging when to service the car or observing the functioning of the train. Furthermore, these sentences are not isolated exceptions: there is a whole array of danglers that don't involve a logophoric controller yet are apparently still acceptable. Although the sentences in the following list involve human controllers, not one appears to involve that human's perspective. Rather, these humans are simply the humans that are under discussion.

(33) a. $_i$Having won support from the Politburo, all that remained for Gorbachev$_i$ was to secure agreement from Afghanistan President Najibullah... (TIME)
b. She$_i$ was triumphant in her battle. $_i$A confident fighter, it was easy to see how methodical she$_i$ is in approaching the fight. (GloWbE)
c. After five months $_i$in detention, a judge released him$_i$ on bail.
d. Although $_i$married, it was apparently a marriage of convenience, and divorce proceedings quickly ensued. (AMZ)
e. They$_i$ shouted abuse and spat as they grappled with the British Airways staff who forced them$_i$ back into their business class seats. And despite $_i$being restrained with plastic handcuffs, the pilot decided he had no choice but to divert the 777 jet to Bermuda. (AMZ)
f. Yes, Bush$_i$ has laid down a bold proposal for also fixing Social Security, but by not $_i$putting that front and center, it has gotten lost behind his$_i$ private

accounts obsession, which is not the country's priority (AMZ: New York Times (2005))

g. It's something more and more businesses are doing: taking people's$_i$ temperatures before $_i$entering. (CBS 8 San Diego (2020))

Nevertheless, the condition of logophoricity is influential in the generative literature, and has been incorporated into several accounts of adjunct control that allow for danglers (Landau 2013; Green 2018). There are exceptions: Boeckx & Hornstein (2004: 444), for instance, are agnostic on the issue. They do not wish to argue against logophoric control, which they say might be factually correct, but they see logophors as a subtle variation on normal pronouns, 'pronouns+' in their words.

Perceivers do frequently control danglers, to be sure, but they do not exhaust the possibilities, as (33) makes clear. But this list is still compatible with the looser [+human] restriction, which we will look at next.

3.2.2 Humanity and topicality

Many have argued that NOC is restricted to human controllers. For instance, N. Chomsky (1981: 324f.) said that in (34) it must be a human rolling down the hill, even though a rock, for instance, could do the same thing.

(34) It is possible to roll down the hill (N. Chomsky 1981: 324)

I must admit that using NOC with nonhuman controllers can occasionally make one sound like David Attenborough when he is embuing one of his animals with a little extra charm:

(35) The tiny bird is at it again. Attracting a mate will not be easy; the competition is intense.

To call [+human] a hard restriction on NOC, however, is a big claim, and yet it is a claim that has been repeated without much challenge, despite occasional counterexamples like those in (32) on p.126. The restriction is presented without hesitation in Manzini's

(1983b: 65) dissertation and it is not challenged in Landau (2013: 232, 235-237, 254-256) either, where it is claimed to be irreducible to either logophoricity (despite the fact that all logophors are necessarily human) or topicality (despite the fact that humans make particularly good topics). The reasoning behind this is that there are [+human, -logophor] controllers[9] and [+human, -topic] ones as well (Landau 2013: 255f.). The human restriction, however, is inescapable for Landau. Pronouns with inanimate reference work (36a) where inanimate control does not (36b).

(36) a. As for the boots, it was obvious that for them to be produced in Italy would increase their appeal.

b. *As for the boots, it was obvious that to be produced in Italy would increase their appeal. (both modified from Landau (2013: 255))

I am not sure that this is right. If we modify (36b) so that it includes a gerund, it works well.

(37) As for the boots, it was obvious that being produced in Italy had greatly increased their appeal. (modified from Landau (2013: 255))

And equivalent examples involving [-human] control of a gerundive subject like *being produced*, *made*, *constructed*, and so on are relatively straightforward to find.

(38) a. Since SIPs are pre-engineered, any waste produced during manufacture is minimised. Being produced in a controlled environment also reduces delays associated with weather changes that may be more common for traditionally constructed projects.

b. Being made of natural cotton means that it is breathable, and washes well.

c. Being constructed using traditional methods makes for a nicely built, affordable airframe.

d. Being constructed from square cut overlap timber board allows flexibility

[9]I am not sure why Landau admits the possibility of nonlogophoric human controllers here but then goes on to stake NOC in adjuncts exclusively on logophoric control. Again, see section 3.3.2 for an overview.

and movement.

e. Being constructed from foam and hollow vacuumformed [sic] panels keeps the weight to 3.5 lbs.

f. Being constructed from 6061-T6 Aluminum allows for countless downshifts from 3rd to 2nd gear...

g. Being made of metal makes it much more durable than any analog you've had before...

h. The idea is that the Tesla is supposed to drop you off and then go park itself and charge. Parking itself would be useless if you had to go plug it in after anyway.

i. Establishing itself as the place where national leaders go to talk to one another helps the company.

j. Being waterproof and fog-free makes them suitable for all kinds of weather.

k. Being small and lightweight means it is easy to store and transport.

l. Being centrally located and having solid infrastructure makes Weld County and the Great Western Industrial Park ideal... (all from iWeb)

These gerunds with apparent [-human] NOC cannot be written off as nominal instead of verbal. Many of them include not only direct objects but even adverbial modification. A human controller seems to be a preference, not a restriction.

Kawasaki (1993) generally takes a more cautious approach to the [+human] preference for NOC. At times, she does call it a restriction (Kawasaki 1993: 30). When a free adjunct is controlled by the subject of the matrix through OC, of course, there is no restriction on whether the controller is human or not (39a). But NOC seems to select a human controller even in situations in which an inanimate one is semantically favoured (39b).

(39) a. Slowly $_i$losing energy, the [man/machine]$_i$ came to a stop.

b. After being spoiled in a refrigerator, there is nothing even a good cook can do. (both from Kawasaki (1993: 30))

I think the possibility of an inanimate controller for (39b) can be improved with a bit of

context (40a). To be sure, it still dangles, but sentences like it slip by editors regularly (40b).

(40) a. The ground turkey would have been perfect for dinner. But being quite spoiled, there was nothing we could do but throw it out.

b. The cause is clear, but being a viral infection there's not much that can be done about it. (The Times (2011))

Kawasaki's other examples do not involve adjuncts, but they can be ameliorated as well, which suggests that we not dealing with a prohibition but rather a default reading. (41a), for instance, is held to require a human controller for the nonfinite complement, but (41b) is perfectly acceptable.[10]

(41) a. The government abolished having to be surrounded by fences. (Kawasaki 1993: 30)

b. That star might have exploded millions of years ago without any information having reached us. The laws of physics, after all, prohibit traveling faster than light.

If the government abolishes an act, it is difficult to see how the act can be controlled by a non-human incapable of understanding that decision and following it. But once we talk about natural laws prohibiting things, non-human controllers become acceptable. I do think that Kawasaki's examples tend towards human readings as they stand, but that happens because the situations they describe do not lend themselves to inanimate controllers.

This is more or less the conclusion she comes to at the end of her dissertation, where she claims that NOC in adjuncts is control by the preferentially [+human] topic. These topics are what dangling adjunct clause is 'about' and are established previously somewhere outside the matrix clause (Kawasaki 1993: 172ff.). Kawasaki identifies some examples of NOC that appear to involve [-human] topics:

[10]Nikolas Gisborne (p.c.) has pointed out to me that, if anything, we would expect complements like these to have stricter constraints than adjuncts.

(42) a. $_i$Being stolen, the Bank of England refused to honour the note$_i$. (Onions (1971 [1911]: 77) as cited in Kawasaki (1993: 194))

b. While pleasing to your eye, the air passing over and around the body hardly notices it. (Safire (1992) in Kawasaki (1993: 194))

She notes that while these sound bad in isolation, in which case the tendency towards OC is harder to ignore, they are more acceptable if given a context in which the controller is the discourse topic (e.g., a car advertisement in the case of (42b)). Kawasaki thus reduces what she initially describes as a restriction to a preference (Kawasaki 1993: 208fn14).

The [+human,-logophor] and [-human] controllers I have mentioned are usually treated as isolated exceptions, so I must take a minute to establish just how free NOC in adjuncts can be. For instance, in the TV series of his History of Modern Britain, Andrew Marr discusses snoek, which is a species of fish. In that discussion, snoek serves as the topical controller of several dangling free adjuncts. But snoek does not here experience anything even in the more limited way that fish can experience things; the snoek Marr is talking about has been tinned and imported, and is instead a thing that is experienced by the people of postwar Britain:

(43) But nothing, nothing was worse than snoek, a South African fish reputed to hiss like a snake and bark like a dog. First imported during the war, now the government imported huge quantities of the stuff... Tinned, they tried to persuade people that it was delicious in salads or sandwiches or pasties or even as snoek piquant served with spring onions and vinegar and syrup. (BBC Two (2007))

Marr is not alone. In (44), we can see that adjuncts can be controlled by non-subjects that do not need to be human or characterised as having human qualities. And in (45), we can see that these controllers need not even be alive.

(44) a. Although $_i$classified as a "shore" bird, the shores this bird$_i$ inhabits are those on prairies, marshes, and tidal ponds. (iWeb)

b. The giant pangolin's$_i$ body is covered with thick scales. When $_i$feeding on ant nests, thick eyelids protect its$_i$ eyes from bites. (AMZ: Animals Sticker-

Pedia)

c. "To everyone's disbelief there was a 3m long snake$_i$ tucked away under the left wing of the aircraft holding on for its dear life," he wrote. $_i$Believed to be a scrub python, Mr Webber wrote that he felt sympathy for the scaly reptile$_i$. (AMZ: Australian Broadcasting Corporation)

d. ... he$_i$ was social and sweet with both people and other dogs. However, after $_i$being returned to the shelter twice, it was brought to the Dog Behaviour Team's attention that he$_i$ suffered from fairly significant territorial issues. (modified from iWeb)

(45) a. Sewage treatment plants do not capture all the beads which wash down the drain, so some$_i$ inevitably end up in the sea. And $_i$being so small, no one really knows where they$_i$ are going. (AMZ: The Economist (2014))

b. The plate$_i$ is now flipped over and the front-face has a ring milled in it. After $_i$being returned to the lathe, a small truncated cone is turned in the center of the plate$_i$ on the front side. (modified from iWeb)

c. Globalrose pledges to produce the freshest quality possible for all our carnation flowers$_i$. $_i$Being produced in the most ecofriendly greenhouses, with the technological advances of the modern floral industry, we are able to sustain the production of quality carnation flowers$_i$ all twelve months of the year. (IWeb)

d. Once $_i$a cold-weather destination, tourists are flocking to Miami Beach$_i$ in summer, too. (AMZ: NY Times "The Dangler Zone")

e. $_i$Being smaller and lighter than a MOTIF you could tuck this$_i$ under your arm. (iWeb)

f. [E.T. the Extraterrestrial]$_i$, like Jurassic Park, was the highest-grossing film of its time (in fact, it$_i$ was only bested by Spielberg's dinosaur romp itself 11 years later). $_i$A true classic, there's nary a filmgoer alive who hasn't heard of it$_i$. (iWeb)

g. Although just around two months old, experts are slowly discovering more

about COVID-19... (Sky News, 02-Mar-2020)

h. Unless $_i$faulty, we are unable to accept the return of underwear$_i$. (iWeb)

i. Although designed with project professionals new to project management in mind, experienced professionals are guaranteed to find value in confirmations and reminders of best practices. (iWeb)

j. Although popular among United States heavy truckers and trucking companies during the 1970s because of strict length laws in many states, when those length laws were repealed, most heavy-truck makers moved to other body styles. (Wikipedia)

k. In 1911, a small tractor aircraft$_i$ emerged from the Factory, known as the Bleriot Experimental 1, or B.E.1. Although $_i$designed by Geoffrey de Havilland, the War Office regarded M. Bleriot as the world's foremost designer of tractor aircraft. (iWeb)

l. There was a significant amount of upset when the large, two-storey Shopper's Drug Mart store$_i$ was built on the Danforth near Broadview less than a block away from the abandoned medical clinic and, while $_i$under construction in 2008, critics complained of a noted influx of large, single-use stores opening on downtown strips, proclaiming it a "suburbanization of the city." (iWeb)

m. Although built to withstand the harshest conditions of the desert, low nutrient levels and calcium deficiency can cause problems generally seen in non-desert acclimated trees and plants. (iWeb)

n. When held up to the light, the entire Lord's Prayer becomes instantly and almost miraculously visible...[11] (AMZ)

o. If passed, California would be the fourth state in the nation with such a law. (AMZ)

p. Her new novel$_i$ is different. Though $_i$dark, there is hope at the end. (AMZ)

q. Although $_i$aimed at foodie bloggers, any blogger would be able to design a minimalistic and clean looking website using this theme's$_i$ features. (iWeb)

[11] In this example, a cross containing the Lord's Prayer is what is being held up to the light, not the Lord's Prayer by itself.

r. $_i$Being made of stainless steel, rust won't be an issue. (iWeb)

s. Not too many people have been happy with any of the news that has come down from the hill lately. The biggest bullet to bite was UCSC's plans to add 6,600 more people [...] over the next 15 years. Thrown on top of such already existing problems as traffic congestion, a water shortage and housing capacity, the angry roar of a response from residents and local government was deafening. Then there was the hiring of the new chancellor [...] who cut a deal with the Regents to create a six-figure position for her partner. While a common practice in any large corporation or university, students in Santa Cruz, who have seen tuition double and classes cut, were none too pleased. (GKP: Language Log (12 May 2005), AMZ)

t. Although located near textile mills, mill owners apparently had no involvement or control in either station. (iWeb)

u. Despite $_i$being medically dubious, we loved the cheeky sass$_i$ that Denny brought to Seattle Grace. (WEB)

v. Although $_i$written in the name of the church of Lyon, it is almost certain that its$_i$ actual author was Florus. (González (2010) *A History of Christian Thought: Volume II*)

w. $_i$Famous for its knitwear, it's not surprising sheep outnumber people by eight to one, and although $_i$famed for its miniature ponies also, it is birds that dominate Shetland$_i$. (Chris Waigl's comment on AMZ: WEB)

x. $_i$Tasty as it is, I'm a little tired of eating my own cooking$_i$ (AMZ)

y. Some lenses are too slick and too hard to handle. Not these$_i$. Despite $_i$being disposable, I normally wear these$_i$ twice as long as recommended with no ill effects. (WEB)

z. Despite $_i$being convex, I've not had any problem sharpening it$_i$, though it's$_i$ certainly a micro bevel by now. (WEB)

I ran out of letters, not examples. The acceptability of these sentences may vary from person to person, but I do not believe that many would reject (or even detect) all of

them. And none of the implicit subjects (the bird, the pangolin, the snake, the dog, the beads, the plate, the carnations, Miami Beach, etc.) can be said to conceptualise what is being reported.

These lists seems to show that almost anything can serve as a controller in NOC, so long as it is salient enough to be accessed easily. This is an important point to dwell on, because a requirement for a [+human] controller is central to many definitions of NOC, which is otherwise defined negatively (e.g., the controller does not need to be local or explicit) (Landau 2013: 232; Landau 2015: 65; Green 2018: 20, 57, 133).

So Kawasaki is right to say the [+human] requirement for NOC seems to be a preference. Such a preference would be a natural outcome of the fact that humans generally like to talk about other humans (Dixon 1979: 85f.). And if humanity is optional, logophoric control has to be optional as well.

Kawasaki's approach accounts for the much of the data that stood against the [+logophor] constraint, but it might seem to have trouble handling examples involving NOC by non-topical logophors. Duffley (2014: 181) points out one of Kawasaki's own examples.

(46) This game is played wearing no shoes. (Kawasaki 1993: 94, 197)[12]

The topic, Duffley says, is the game, not the people who play it. Green (2018: 50, 55f.) similarly points to the boilers of the potatoes in (218) on p.94, repeated here as (47).

(47) Potatoes are tastier after boiling them. (Ackema & Schoorlemmer 1995: 182)

The boilers are not established in context, and Green takes this to mean that topic control should therefore be subsumed under logophoric control. But that approach does not work, because it fails to account not only for [+human, -logophor] examples like those in (33) on p.126, but also for [-human] examples as seen in (47a) and the sentences in (32) on p.126.

Do the examples that Duffley and Green provided really stand as counterevidence to the idea that logophors are a particular sort of topic? Kawasaki did not have a chance to compare her topical approach with logophoric control, as her dissertation came only

[12]This example is actually from Roeper (1987: 269, 297)). We will encounter it again in section 3.2.3.

a year after Williams (1992), which came up with the latter concept. To my knowledge, Adler (2006) is the only study to adopt Kawasaki's topical control, which she prefers to logophoric control. I think Adler is right in this. Topical control has better empirical coverage because it allows nonhuman controllers, so it is better to attempt to subsume logophoric control under it.

Adler's conception of topicality is not the same as mine; while she acknowledges the importance of establishing topics in prior discourse, she is often more concerned with cataphoric persistence of topicality as indicated in the matrix clause instead of the anaphoric accessibility of the topic in the preceding discourse (see Givón (2001a: 198f.) for a discussion of these two aspects of topicality). The problem with Adler's approach can be seen in her treatment of (29) on p.125 (repeated here in slightly altered form as (48)) as an example of topical, not logophoric control:

(48) a. Having just arrived in town, the main hotel impressed Bill.

b. *Having just arrived in town, the main hotel collapsed on Bill.[13] (both from Adler (2006: 99) after Williams (1992: 299))

According to Adler (2006: 99), the distinction between these two sentences lies not in how amenable they are to logophoric control (Williams 1992) but rather in the controller's position on Keenan and Comrie's (1977) accessibility hierarchy. The assumption here is that topicality is necessarily reflected in the syntactic positions of various NPs in the matrix clause. In (48a), *Bill* is the direct object, while in (48b), *Bill* is selected by a preposition, and so *Bill* is more 'topical' in the former. The problem is that these same calculations do not work in other instances, such as (49).

(49) a. *Having just arrived in town, the train struck Bill.

b. Having just arrived in town, the train made an impression on Bill.

If the controller's position in the accessibility hierarchy is the best way to determine the topic, *Bill* should be a more appropriate topic as the direct object in (49a) than as the

[13]On p.181, we will see, *contra* Williams (1992), how sentences like this can be salvaged if we make them more coherent.

complement of a preposition in (49b), and yet that is not what we find. The contrasts in (48) and (49) are better explained through discourse coherence: when do the two clauses make sense together as a unit of communication? The catastrophic events of the matrix clause in (48b) and (49a) are described in a clinical, detached way that precludes the shared perspective implied by the adjunct.

It might seem that topical control from the preceding discourse and logophoric control from the understood experiencer are separate phenomena. Indeed, for much of the time I was writing this dissertation, I believed that they could not be collapsed because, as we have seen, some instances of logophoric control are apparently not topical. And there is a difference in their distribution. We can still have logophoric control in adjuncts that attach to the right of their matrix clauses, as was demonstrated in list (217) on p.93.[14] In contrast, non-human topics only stand a real chance of controlling an adjunct when that adjunct is to the left. This is an outcome of the linearity of language: once the matrix clause has been processed, we look to it for the topical controller by preference over an extrasentential entity. If we look back at the examples in (45) on p.132 and attempt to place the adjuncts in final position, the result is either a successful shift in the preferred controller or, failing that, ungrammaticality:

(50) a. The plate$_i$ is flipped over. A small truncated cone$_j$ is turned in the center after $_{*i,j}$being returned to the lathe.

b. There was upset over the new store$_i$. Critics$_j$ complained of a noted influx while $_{*i,?j}$under construction.

Topical control in sentences like (50) involves a competition, and the intended controller is easily overwhelmed. I have encountered very few exceptions to this, and they are usually at the limit of what I find acceptable. Here is an example:

(51) A jury has overturned the Amanda Knox murder conviction after almost four years in an Italian prison. (AMZ: CNN (2011))

Zwicky (2017b) remarks that the subject rule is powerful here because the adjunct is

[14]For more, look ahead to list (56) on p.140.

clause-final, but I think this sentence goes wrong in a more specific way: logophoric control can overcome subject coreference even in final position, but here the person who spent four years in a prison is Amanda Knox, whose perspective is not being taken. I understand (51) as meaning that the jury was in prison for four months. That is an unlikely state of affairs, but there is no semantic clash here to rule it out. To my mind, the only explanation for the topical final control in (51) is that the adjunct involves looser control because the predicative element (*in an Italian prison*) is located deeper within a non-predicative adjunct; when the non-predicative part is removed in (52), the acceptability seems to decrease even more.

(52) ?A jury has overturned the Amanda Knox murder conviction after spending almost four years in an Italian prison. (modified from AMZ: CNN (2011))

There may be a way, however, to subsume logophoricity under topicality. There is a sense in which logophoric centres are ever-present topics. Consider the situations in which a pronoun can acceptably serve as subject for a sentence. Generally, *he*, *she*, *they*, and referential *it* can start off sentences only when their referents have been established in the discourse. Deictic *I* and *you*, on the other hand, are always available, even when other topics are clearly under discussion. They in fact have immeasurable topicality: they are always part of the discourse model and ready to use (Dahl 2000). By extension, *he* and *she* do not require antecedents in highly subjective prose—the character whose consciousness is being shared becomes so salient in free indirect discourse that there is no need to reestablish that character continually as a topic (see section 4.1 for more on this).

This is parallel to the availability of experiencers to serve as binders for exempt reflexives, as seen in Zribi-Hertz (1989), Pollard & Sag (1992), and Reinhart & Reuland (1993). First and second-person exempt reflexives do not need linguistic antecedents (53a), but third-person exempt reflexives do (53b,c) (outside of modernist prose, which would ameliorate the otherwise ungrammatical (53c)).

(53) a. Similar odorous substances, called pheromones, are used as mating stimuli

by many animals, even by species as highly evolved as **ourselves**. (Zribi-Hertz 1989: 708)

b. To Jane$_j$, Mary$_m$ was less attractive than **herself**$_j$. (modified from Zribi-Hertz (1989: 718)

c. *Mary$_m$ was less attractive than **herself**$_{\neq m}$. (modified from Zribi-Hertz (1989: 718))

Not all apparently logophoric free adjuncts are immediately amenable to this approach. Recall the counterexamples Duffley and Green offer (*This game is played wearing no shoes* and *Potatoes are tastier after boiling them*). Nobody taking part in the communication is being described as going barefoot or boiling potatoes. But the pronoun *one* is also an acceptable way to start off any finite matrix sentence without discourse salience. In fact, that salience is impossible to build up: *one* does not even have the option of being anaphoric because it cannot corefer with another NP (Huddleston & Pullum 2002: 427). A sentence like *One does not wear shoes when playing this game*, for instance, could feasibly be inserted at any point in a discussion of how to play beach volleyball. There is precedent for this. Dahl (2000) gathers speech-act participants together with generic referents under the term 'egophoricity'. Standard anaphoric pronouns are used in a clustered way: we talk first about one topic and then another. Perpetually available egophoric pronouns, on the other hand, are scattered throughout the discourse. Topical control of adjuncts, I claim, is split in a similar way.

We will return to this point later in ch.4 when we consider the accessibility of discourse referents. For now, we can look back at the three restrictions that have been suggested ([+logophor], [+human], and [+topic]) and say that while each has something to do with how we establish a controller in NOC, only [+topic] can stand by itself.

3.2.3 Implicit Agent Control

We are not quite done with syntactic explanations of danglers, however. We have to dispense with the idea that adjuncts can be controlled by an implicit agent of the matrix clause. This has mostly been done for us by Kawasaki (1993) and Landau (2013), but I

have a few pieces of supporting evidence to add to the argument. I also want to tie this discussion to my proposal: the sentences that we will examine do not add a new type of control to the mix, but instead get out of the way of the topical control that is already under consideration.

We can start by observing that passive matrix clauses often make danglers seem less objectionable (Lyngfelt 2009a: 39f.). Adler (2006: 97) notes that these danglers are acceptable to the point that, against her predictions elsewhere (Adler 2006: 16f., 67), OC is not necessary for them even when they are attached low. One explanation that has been put forward is that the agent of the matrix, even if not overt, is syntactically still present and able to control in these situations (Roeper 1987: 297). In (54), it is the players of the game who do not wear shoes and walk through town, while in (55), the implicit electors of the president are supposed to be the ones who failed to consider his competence:

(54) a. The game was played wearing no shoes.
b. The game was played walking through town. (both from Roeper (1987: 297)

(55) The president was elected without considering his competence. (Roeper 1987: 297)

I find (55) a little harder to get than (54a,b), probably because control by *the president* can only be ruled out through pragmatic inferences: presidents can consider things, too. But games cannot wear shoes or walk through town, and when control by the matrix subject is ruled out by a semantic clash in that way, the results are impeccable:

(56) a. Grapefruit juice should be avoided while taking VYTORIN. (iWeb)
b. Walnuts should be handled wearing gloves. (WEB)
c. Appropriate precautions should be taken while handling and using filled syringes. (iWeb)
d. An error was encountered while attempting to browse the contents of SERVERNAME. (iWeb)
e. This [photo] was taken while relaxing at Magen. (WEB)

f. Jacquard is a fabric that is woven while controlling each of the warp (vertical) yarns... (iWeb)

What Roeper thinks is IAC seems instead to be standard NOC presented in a way that makes it easy to process. To see why this is so, we should turn to the literature on rationale clauses (RatCs), which exhibit similar control patterns. Manzini (1983a: 428) observes that a RatC[15] after a passive appears to be controlled by an implicit agent of that passive:

(57) Mary was fired to hire Bill. (Manzini 1983a: 428)

This point was elaborated in Roeper (1987). When a matrix clause has an explicit agent as its subject, that subject can of course can control a RatC as in (58a). When there is no indication of an agent, as in the unaccusative (58b), the RatC is not controlled. The fact that (58c) is acceptable led Roeper to agree with Manzini that the RatC can be controlled by the unpronounced but nevertheless syntactically present agent of the matrix passive.

(58) a. Bill sank the ship to collect the insurance.
b. *The ship sank to collect the insurance. (Roeper 1987: 268)
c. The ship was sunk to collect the insurance. (Roeper 1987: 268)

But as Kawasaki points out, this contrast is still present even when an explicit subject is present and the question of control is unnecessary.

(59) a. *The ship sank (in order) for the owner to collect the insurance.
b. The ship was sunk (in order) for the owner to collect the insurance. (Kawasaki 1993: 204fn2)

Why is (59a) still pretty much as bad as (58b)? It seems to be a matter of coherence between clauses. The point of a rationale clause is to allow speakers to explain a two-part plan: the event in the matrix clause is aimed at realising the event in the adjunct. The

[15]Manzini uses the term 'purpose clause', but her example can be expanded with *in order to*, one of the diagnostics proposed in Faraci (1974: 28) for RatCs.

passive (59b) does involve an implicit agent that unaccusative (59a) does not, but what that agent does is allow us to understand someone as responsible for the plan about an insurance claim for a ship, no matter who collects the money. That is, a purposeful agent must be involved behind the scenes in a sentence with a RatC even if that agent does not receive a theta role from the matrix predicate, and (59a) does not supply that purposeful agent because it implies that the ship sank of its own accord (Williams 1985: 310f.).

Landau (2013: 224f.) provides additional evidence that Roeper's observations are not connected with issues of control. In (60), the patient (the explicit subject of the passive matrix), not the implicit agent, serves to control the RatC.

(60) The house was emptied in order to be demolished. (modified from Landau (2013: 224); originally from Español-Echevarría (2000))

The implicit agent of the matrix does two things here: empty the house and put the plan expressed by the entire sentence into action. But that implicit agent does not get to control the adjunct when subject control is available, which is again suggestive of NOC.

Kawasaki (1993) and Landau (2017) come to the same conclusion: RatCs are controlled by a combination of syntax and semantics. Subjects can of course control RatCs through OC as in (60), but when OC is precluded due to a semantic clash, the relation in question must be NOC. Where they differ is in what they think NOC involves: control by the [+human] topic or control by a logophoric centre.

Now let's return to *-ing* adjuncts with apparent IAC. Kawasaki argues that these are also controlled through NOC by the discourse topic, not through OC by the implicit agent of the passive. This can be seen in the following sentences, which demonstrate that the controller must be an established topic (61a), not new to the discourse (61b) (logophoric control is discounted here).

(61) a. After collecting some money, a bank account was opened by the landlord.
b. *After collecting some money, a bank account was opened by a businessman. (Kawasaki 1993: 168)

The discourse properties of the controller should not matter if the relation is OC, and the fact that (61a) is also ungrammatical for many people also suggests that we are dealing with NOC, which has varying acceptability for different language users (Kawasaki 1993: 168).

And just as Landau observed OC for RatCs with passive matrix clauses as in (60), subject control is still available for *-ing* adjuncts with passive matrix clauses (62). Any implicit agents that are doing the supervising, injuring, and driving do not compete.

(62) a. Small children$_i$ should be supervised while $_i$swinging.

b. Miller$_i$ was injured while $_i$playing the lead role in "Anything Goes".

c. ...if the truck$_i$ was driven while $_i$overheating, even for a short time, the aluminum head will begin to warp. (all from iWeb)

NOC is dispreferred when subject control is available; none of the most acceptable examples involves a matrix subject that could potentially control the verb (56). It is particularly acceptable when the matrix subject is [-human] while the controller is [+human] (Kawasaki 1993: 165). This is compatible with Landau's logophoric account, but successful control also seems to be more likely when the opposite situation holds (i.e., a [-human] controller with a [+human] matrix subject), something that Landau's account cannot handle. If we look through (45) (from p.132 onward) once more, we can find a great number of instances in which nonhuman controllers are more acceptable because the human matrix subjects set up a clash.

When control is ruled out by pragmatics alone, as in (55), things are less straightforward, but the sentence is still acceptable in some circumstances. As we expect for NOC, the sentence seems to be slightly improved when the adjunct is in initial position. In (63), the human user is not the human who is registering the request; that is done by those offering the registration service.

(63) All requests received from the USERS are logged and transmitted to the User's branch for their fulfillment. The requests become effective from the time these are recorded/registered at the respective branch. While registering the request,

the USER shall be informed about the time normally taken. (iWeb)

And so we can see that passive matrix clauses do not create IAC (i.e., implicit OC), but rather make matrix-subject OC less likely so that NOC can work undisturbed. In some cases, IAC is completely unavailable and yet both RatCs (64) and -*ing* adjuncts (65) are successfully controlled.

(64) a. No coupon is necessary to take advantage of these prices.

b. A cannonball through the ship's hull was all that it took to collect the insurance.

(65) a. A vacation was necessary after finishing the dissertation.

b. . . . no tracking is possible after receiving the email that says that your order has been completed. (iWeb)

c. There is not much left after paying for rent and having a little fun. (iWeb)

Adler (2006: 97) claims that NOC ("switch in control") is not available for low-attached temporal adjuncts if the matrix is active, but (65) shows that this is not the case. We can even see cases of NOC with -*ing* adjuncts that would not be acceptable for RatCs: -*ing* adjuncts can be controlled when they appear with unaccusative matrix verbs (66a) or within NPs (66b). The implicit agent is simply not necessary.

(66) a. The ship sank after collecting the insurance.

b. (The protests) started after [the death of George Floyd while in police custody]. (BBC (2020))

It is true that danglers are less objectionable when they appear with passive matrix clauses. But this is because passive matrix clauses make it easier for us to process what is going on, not because they generate a special type of control from an implicit agent. They are like the active matrix clauses we have just seen in that they simply get out of the way of the processor.

3.3 Modern generative theories of control

Now we must examine the mechanisms posited to account for adjunct control. First, we will look at the Movement Theory of Control, which Hornstein developed in collaboration with Boeckx. With a modification to how it resolves NOC, the MTC has good coverage of the core facts of adjunct control. But the way in which it accomplishes OC, Sideward Movement (Nunes 1995), makes it unsuitable for dealing with other adjuncts that exhibit similar control patterns.

Next, we will look at the MTC's most prominent generative rival, Landau's Two-Tiered Theory of Control, which ties adjunct control along with subject control of *promise* to logophoric centers. Landau's account does not rely on movement, and so it can potentially account for a variety of adjunct structures that do not appear to be amenable to movement. Its treatment of complement control also has empirical advantages. But as we have already seen, logophoricity is not up to the task of explaining adjunct control, and that weakness causes problems for an account that is steeped in the concept.

These two inadequacies combine to undermine Green (2018), an account of adjunct control that employs Hornstein's syntactic mechanism with Landau's assumption of logophoric control. Otherwise, I am sympathetic toward the importance Green places on processing biases and pragmatic constraints.

All three generative accounts contain interesting observations that must be accounted for, including the temporary availability of control options due to incremental processing (Boeckx & Hornstein 2007: 255ff.), a distinct preference for control by the speaker or perceiver (Landau 2017), and the availability of NOC before OC is ruled out (Green 2018: 39-40).

3.3.1 The Movement Theory of Control

In GB, the distinctions between raising (67a) and control (67b) were seen to justify the existence of two separate null elements: trace and PRO.

(67) a. John seemed t to be a doctor.

b. John wanted PRO to be a doctor.

Seem does not assign a θ-role to *John* in (67a), but *want* does in (67b). Because θ-roles are distributed at DS, (67a) must involve the prior movement of *John* from a location where it can get a θ-role. The distribution of θ-roles at DS also means that (67b) cannot involve movement, as *want* needs to discharge both of its θ-roles and, furthermore, movement would require the chain for *John* to receive two θ-roles in violation of the θ-criterion (N. Chomsky 1981: 36, 202f.), which stipulates a one-to-one relationship between θ-positions and chains.

This distinction between trace and PRO was called into question by Hornstein (1999), which argued that both raising and control could be understood as involving a trace (or rather a deleted copy). This meant the θ-criterion, with its stipulation that each chain take no more than one role, would have to go. The difference between raising and control, then, has to do with whether two θ-roles are assigned to a single chain—if they are, then the controller gets the second one on the way up. But movement alone cannot account for the flexible search for a controller in sentences like *Bill asked Anne if [doing the dishes] was going to be a big job*, and so Hornstein introduces a syntactic distinction between OC and NOC: the former involves the A-movement we have been discussing, while the latter involves *pro*. The two are very different. Movement requires the trace to have a local c-commanding controller, like a reflexive. It is a completely syntactic operation and does not require any other type of linguistic processing. The *pro* of NOC, on the other hand, behaves like a regular pronoun in that it can find a controller in a relatively free way (Hornstein 1999: 90-93; Hornstein 2001: 56ff.). NOC becomes available only when OC is unavailable because movement is barred; it is more costly to invoke *pro* and so NOC is the 'elsewhere' case.

I am sympathetic to some of what Hornstein does here. The reduction of invisible entities is always a good thing, and in some ways the MTC draws closer to theories that offload many of the differences between raising and control from the syntax (Gisborne 2008: 228ff.). That is, the MTC handles both through movement, just as LFG (Dalrymple 2001: 319, 324) and HPSG (Sag et al. 2003: 367, 372) handle both through structure

sharing. But Hornstein's theory runs into difficulties accounting for the data, and it narrows its coverage in this way for theory-internal motivations.

Researchers in the semantic-pragmatic camp, of course, have all taken issue with Hornstein's idea (see in particular Culicover & Jackendoff (2001), Jackendoff (2003), and Culicover & Jackendoff (2006)). We have already gone through many of their objections to syntactic control in general, which usually center around problems like the lack of a suitable explanation for subject-control *promise* and control shifts. But even other researchers in the syntactic camp, like Landau (2003, 2007, 2013), see the MTC as too restrictive. The latest reply to these concerns is Boeckx et al. (2010: 169-194). There, the MTC camp attempts to marginalise *promise* and control shift, but does not provide an adequate explanation of why these exceptions to the MDP should be allowed in the first place. Why should the acceptability of movement suddenly be so much more variable than it normally is?

But let's put those objections aside for a moment to look at how the MTC handles adjuncts.[16] Hornstein's initial approach was to assume subject control of all adjuncts, which entailed the subject moving out of the adjunct into the matrix clause. Adjuncts, however, are commonly assumed to be islands. This is an oversimplification, but it is true that movement out of adjuncts is at least complicated compared to movement out of complements (Truswell 2007a, 2011). And yet under the assumptions of the MTC, control is accomplished through movement. How to get out of this?

What Hornstein does is utilise the Sideward Movement of Nunes (1995), which was originally postulated for parasitic gaps. There is no reason under the MTC, Hornstein (1999: 88f.; 2001: 89) says, to forbid copying between distinct trees, so the movement is allowed if it happens before the adjunct is truly an adjunct. First, a subjectless matrix clause and what will become the adjunct are generated side by side. What will become the subject of the matrix starts off low in the adjunct.[17] It moves up the adjunct in

[16]Boeckx and Hornstein usually treat temporal adjuncts with prepositions like *after*, *before*, and *while*, but the fact that they include the occasional bare free adjunct without comment indicates that they see these adjuncts as variations on a theme (Boeckx & Hornstein 2004: 443).

[17]Presumably, Hornstein would handle multiple adjuncts in the same way as he would across-the-board extraction.

the usual way before it gets copied over into the matrix SpecVP where it discharges the θ-role of the matrix verb. In the case of a transitive matrix, the direct object must be merged before Sideward Movement can occur; otherwise, the adjunct subject could fill that position. The two trees are then merged, and then the subject moves up again in order to complete the derivation. This seems quite involved, but Hornstein's hands are tied. Again, his theory requires him to satisfy control configurationally, and he has to do this by moving through structure that normally bars movement.

How does Hornstein deal with danglers? At first, by ignoring them. For some time, Hornstein continued to assume that subject-controlled adjuncts were the only type of adjunct (Hornstein 1999: 88-90; Hornstein 2001: 46; Hornstein 2003: 31f.; Boeckx & Hornstein 2003: 270). Landau's (2003: 481-483) criticism, however, brought adjuncts with atypical control to his attention:

(68) a. Mary$_m$ lost track of John$_j$ because, $\underline{_{m+j}\text{having been angry at each other}}$, he$_j$ had gone one way and she$_m$ the other. (Bresnan 1982: 397)

b. $\underline{\text{After }_{exp}\text{pitching the tents}}$, darkness fell quickly. (Kawasaki 1993: 173)

c. Mary$_i$ was baffled. $\underline{\text{Even after }_{i}\text{revealing her innermost feelings}}$, John remained untouched. (Landau 2003: 482)

To my knowledge, Boeckx and Hornstein have not responded to (68a), but the tent-pitching example (68b) is not insuperable (Boeckx & Hornstein 2004: 441). Recall that Hornstein had argued earlier that NOC became available within islands, where movement was ruled out (Hornstein 1999: 92, 2001: 41; 2003: 57). This could be extended to adjuncts in which OC was ruled out due to a semantic clash (here, *darkness* cannot pitch a tent). Movement would then be blocked not by an island but by selectional requirements. I suppose that this argument could be extended to (68a)—a plural controller is necessary to license *each other*, so control of the adjunct is resolved through NOC. But (68c) is trickier; there is nothing stopping John from revealing to a third party the innermost feelings of a female known to him, so OC can only be ruled out by pragmatics: the situation would be odd.

Boeckx & Hornstein (2004: 441f.) do not take that approach, instead choosing to shift the goalposts a bit by replying that the MTC permits NOC in cases in which movement (and therefore OC) is ruled out for the indices provided (see also Boeckx & Hornstein (2007: 252)). This means their elsewhere case has changed again. Before, NOC was allowed to operate when OC was impossible (first due to islands, and then for semantic reasons). But now, NOC is allowed to create new readings that OC cannot create, and it does not have to wait until OC is banned outright to do so. But if OC and NOC both create the same reading, OC is used.

The problem is that this massively overgenerates: we cannot use NOC freely to create readings that are not possible with OC, or else adjuncts could be understood as controlled by nearly anything. Boeckx & Hornstein (2007: 253f.) answer this objection in advance by positing a more general preference that if OC can be established instead of NOC (no matter the reading), then the OC reading will be preferred as a default over the NOC reading. That is, for a sentence like (69), two separate readings are generated with each of the two salient relations being generated, but the reading where the adjunct is controlled obligatorily by *John* is preferred to the extent that the other reading is unavailable.

(69) John kissed Mary without getting embarrassed. (Boeckx & Hornstein 2007: 253)

This raises an interesting point: what happens when hearers are not sure whether OC is available? Boeckx and Hornstein observe that the parser does not know whether movement can be established in the sentences in (70) when the word *washing* is encountered (note that they assume that Kiguchi and Hornstein are right about gerundive subjects involving OC; see footnote 3 on p.112 for why this view is problematic).

(70) a. John said that washing himself delighted Mary.

b. John said that washing herself delighted Mary. (Boeckx & Hornstein 2007: 252, Boeckx et al. 2010: 207)

There is no indication that movement is available, but *pro* is available, and it will allow the parser to come to a conclusion about the sentence more quickly. It is not overruled in any way because the possibility of OC is not yet apparent. Let's leave gerundive subjects

aside, as the question of Kiguchi and Hornstein's OC complicates the point. What I want to emphasise here is that Hornstein's approach provides an explanation of why initial free adjuncts are more given to NOC that is actually in line with my own account of incremental parsing: it is easier to resolve the free adjunct immediately via a looser control (NOC) than to hold on in hopes that subject coreference (OC) will be available:

(71) John said that after washing himself Mary danced with Dave. (Boeckx & Hornstein 2007: 261fn15)

Even though Boeckx and Hornstein touch on danglers only briefly, their account is quite compatible with many naturally-occurring danglers in ways that they do not mention. Their assumption of pronoun-like resolution of NOC is better than logophoric NOC in empirical coverage, as it handles [-human] controllers. And the global preference for OC over NOC provides an explanation for why subject control takes over adjuncts more than the preference for subject coreference does with pronouns.

But the brevity of their account as it is presented means that it is still incomplete, and it overgenerates control relations even with the constraint that OC overwhelms NOC when it is available. For instance, in (72a) the narrator arrives, while in (72b) it is the hearer, but in neither case is it *Bob*, which is presumably what Hornstein would predict, as there is nothing to overwhelm that reading.

(72) a. There was a message from Bob after getting home.

b. Was there a message from Bob after getting home?

What Hornstein needs here is a more thorough analysis of why first- and second-person reference overrides third-person so easily, something that he does not address. As I have argued, this tendency arises because adjunct control, unlike regular anaphora, does not contain enough information to rule out the ever-present egophoric controllers. Once we add that, Hornstein's theory can account for even more of the data: *pro* is silent, and so can be resolved egophorically.

But these *after* adjuncts bring up another issue with the arguments that have been made for Sideward Movement in the MTC: these arguments frequently treat all adjuncts

needing control as having the same structure. Recall my criticism in section 2.2.7 of the assumption that all adjuncts are all the same: prepositions like *while* seem to take unsaturated XCOMPs, even if a verb is not present (73a), but the same cannot be said for prepositions like *after* (73b), which do not support predicative NPs.

(73) a. While a policeman, he earned a bachelor's degree. (WEB)

b. *After a policeman, he earned a bachelor's degree. (modified from (a))

This means that *while eating* is an adjunct with an unsaturated clausal complement and *after eating* is an adjunct with a saturated verbal-gerund complement, even though both usually corefer with the matrix subject while optionally dangling with logophoric or topical control. These similar control patterns have led the generative literature to treat them as identical (Kawasaki 1993; Boeckx & Hornstein 2004: 441ff.; Landau 2013: 225-229; Green 2018). Many of the arguments these studies have made in favour of adjunct OC are actually based on sentences that I have shown do not seem to support functional control. In Boeckx & Hornstein (2004: 441ff.), a few bare FAs are considered, but they are not differentiated from the adjuncts examined elsewhere that are selected by *without* (Hornstein 1999: 77, 88ff.; Boeckx et al. 2010: 253, 255), *after* (Hornstein 1999: 88; Hornstein 2003: 30ff.; Boeckx & Hornstein 2004: 441ff.; Boeckx et al. 2010: 261fn15), and *before* (Hornstein 1999: 88; Hornstein 2003: 32; Boeckx & Hornstein 2004: 440). What this means is that the arguments in favour of OC through Sideward Movement cannot draw on all of the evidence these studies present for subject-coreference in adjunct control, because the evidence includes *after* adjuncts, which seem to get by on NOC alone.

Of course, my own account continues to distinguish functional from anaphoric control, although I actually hold out hope that all control will eventually be accounted for through the latter. The reason why I have persisted in thinking that functional control must be involved with bare adjuncts and *while* adjuncts is that we have to explain not just the *-ing* adjuncts but the other nonfinite and verbless adjuncts as well. In section 4.4.3 we will see some evidence that there may indeed be some differences between these *after* and

while adjuncts.

There is also a problem specific to the use of Sideward Movement to account for adjunct control. Fischer (2018) lists examples of OC into non-adjoined islands in German. If OC is possible into non-adjoined islands, then it is problematic to rely on Sideward Movement to explain OC just in the case of adjunct islands. Fischer instead supposes that adjunct control involves movement of an empty argument just as far as the edge of the adjunct, where it can be licensed by a controller. Salient logophoric entities can also control via a logophoric center projected in the left periphery. Such an approach, of course, does not have a way to deal with non-human non-local controllers.

So the dilemma for the MTC is now that OC through Sideward Movement is problematic because the same control relations are found in places where OC is ruled out, but Fischer's (2018: 31f.) amendment to the MTC introduces logophoricity, bringing empirical coverage problems. There may be a way to alter the MTC in other ways to overcome this problem, but the theory as it stands cannot cover the facts.

We should also not forget our earlier objections to the MTC's coverage of OC. We put those aside on p.147 in order to look at adjunct control, but they remain a lasting challenge.

3.3.2 The Two-Tiered Theory of Control

Let's set the MTC against Landau's (2015) Two-Tiered Theory of Control. The two tiers that he refers to are predicative and logophoric control, a bifurcation originating with Williams (1992). For Landau, there is a structural difference between these two types of control. Predicative control involves a smaller FinP (after Rizzi (1997)), while logophoric control embeds that FinP within a larger CP and associates it with a logophoric center that is necessarily human because it must be able to have a perspective on the situation (Landau 2015: 25ff., 39ff.). In the case of adjunct control, this looks like (74).

(74) a. Predicative/OC: $[_{PP}$ P $[_{FinP}$ PRO_i Fin $[\ _{TP}$ ~~PRO_i~~ $\ldots]]]$

b. Logophoric/NOC: $[_{PP}$ P $[_{CP}$ *pro* C_{+log} $[_{FinP}$ PRO_i Fin $[\ _{TP}$ ~~PRO_i~~ $\ldots]]]]$

(modified from Landau (2017: 100, 2020a: 9))

The default control strategy chooses predicative over logophoric control when both are semantically compatible; the former is preferred because it is strictly syntactic and involves a simpler structure according to Economy of Projection. Logophoric NOC is the elsewhere case for Landau (2017: 98), too. Logophoric control also allows Landau to explain many of the problems for syntactic approaches that rely on distance alone (subject-control *promise* and control shift). In the case of complement control with attitude predicates, logophoric control is generally resolved locally and is thus OC, but in adjunct control, the understood subject can take extrasentential control from a perceiver or speaker.

Logophoric control becomes an option for Landau in cases in which normal control is ruled out due to semantic clashes with the matrix subject. In (75), an *idea* cannot chat to people, see situations, or spend hours doing things.

(75) a. [The idea] came to him after chatting to an acquaintance with a false arm. (iWeb)

b. The idea came to him after seeing his grandparents struggle with their prescriptions. (iWeb)

c. The idea hit him after spending countless hours in a cold, moist ocean suit. (iWeb)

This emphasis on immediately resolved control by an experiencer is good. There is a very real sense in which logophoric control is privileged over other types of topical control, and for at least some people it seems to be the only type of topical control that is acceptable. But because it relies completely on logophoricity, Landau's theory falls short of the empirical coverage we require, as we saw in sections 3.2.1 and 3.2.2. There is no need to go into the evidence against the proposed [+logophor] and [+human] constraints on NOC again, so instead we should turn to consider other observations Landau makes.

But first, I would like to take a moment to consider an idea of Landau's that he does not actually propose in connection with adjuncts: logophoric extensions. At first, they seem temptingly applicable to adjunct control, but I will come to the conclusion that they cannot be used in this way.

Logophoric extensions (Landau 1999: 127ff.; Landau 2013: 248f.) come from the observation that nonfinite clauses are occasionally controlled by the subject-determiner genitive within the NP that we expect to exert control (76a), a relationship that is usually blocked (76b). This is not merely a matter of *confidence* not being able to control the same things that *friends* can (as is suggested in Chomsky (1981: 77f.)). A car certainly cannot plan an itinerary, and yet (76c) is as bad as (76b). And this contrast is not a matter of the concreteness of the intervening items in (76b,c) either, as is demonstrated in (76d).

(76) a. It would help [Bill's$_i$ **confidence**] to $_i$plan his itinerary in advance.
b. *It would help [Bill's$_i$ **friends**] to $_i$plan his itinerary in advance.
c. *It would help [Bill's$_i$ **car**] to $_i$plan his itinerary in advance.
d. It would ruin [Steve's$_i$ **figure**/**career**] to $_i$eat so much ice-cream. (all from Landau (1999: 128f.))

Landau suggests that there are certain words (*career*, *status*, *confidence*, etc.) that do not introduce a new discourse referent, but rather represent a logophoric extension of the person referred to by the subject-determiner genitive. He says he is tempted by the possibility that the right characterisation of this group of words might be that they all can be understood as the inalienable possessions of the subject-determiner genitive. They are referentially dependent on the subject-determiner genitive and so inherit its index. Whatever the answer is, this account cannot be extended to adjunct control, despite the similarities in (77).

(77) a. Checking himself in the mirror, [Bill's **confidence**] got a boost.
b. ?Checking himself in the mirror all day, [Bill's **friends**] started to get annoyed with him.
c. ?Checking himself in the mirror, [Bill's **car**] started to roll into the grass.

While I would hesitate to call (77b,c) ungrammatical, I do find that *friends* and *car* attempt to steal control more than *confidence* does (and they fail because of reflexive *himself*). But there are problems with applying Landau's logophoric-extension and

inalienable-possession characterisations to sentences like these. We can easily find non-human (78a) and even inanimate genitives (78b) serving as controllers.

(78) a. While walking on these rough rocks, [**the wolf**'s nails] will get a trim.

b. As an unincorporated area, [**Kemp Mill**'s boundaries] are not officially defined. (Wikipedia)

While (78) does involve interveners that are inalienable possessions of the genitives (*nails* and *boundaries*), it is also possible to find interveners that are not inalienable:

(79) a. After wading through a long, quasi-academic examination... [the reader's **reward**] is a hoary lecture... (AMZ)

b. Growing up in Tokyo, [her **childhood summers**] were spent at her grandparent's farm. (iWeb)

c. While out deer hunting, [his **gun**] misfired... (Wikipedia)

d. Like many Iowa farmers, [(Gary) Plunkett's **corn harvest numbers**] have gyrated... (AMZ)

Some alienable interveners are particularly common: family members. While I suppose that family members are inalienable in some sense, they are also clearly referentially distinguishable. In fact, Landau (2013: 248) specifically uses *aunt* as an example of an intervener that is not a mere extension of its genitive. Moreover, family members are also human perceivers, and therefore liable to steal control. In every way it seems they would be very effective at distracting the processor, and yet in many cases they seem not to intervene. In fact, family members are quite commonly involved in danglers:

(80) a. Born in Scotland, [his **engineer father**] moved to Canada to work for the oil industry when he was a child. (iWeb)

b. Growing up in Italy, [his **family**] introduced him to sugar-based treats early on. (iWeb)

c. Born in France, [his **father**] sent him to America when he was eighteen... (iWeb)

d. Born in Salto, Uruguay, [his **parents**] were wealthy cattle ranchers. (Wikipedia)

e. Despite being born in England, [his **maternal grandfather**] comes from Scotland. (Wikipedia)

It is remarkable that many hearers do not consider the competitors for control in (80). Part of the explanation may be that these come from biographies; the individual in question is very much the discourse topic. Note also that none of the individuals controlling the adjuncts can be construed as the logophoric centre; the writer is describing the events in each person's life from a detached perspective. But in more regular circumstances, the subject is likely to take control if it is suitable. And so if Bob is previously established as a discourse topic, (81a) acceptably dangles, (81b) will be a garden-path dangler, and (81c) is likely to garden-path into a howling dangler, as a dog winning the lottery is conceptualisable if not plausible. It seems clear that all of these examples involve anaphoric control that is sometimes sabotaged by an available competitor.

(81) a. After winning the lottery, [Bob's **life**] started to change.

b. After winning the lottery, [Bob's **sister**] started to hyperventilate.

c. After winning the lottery, [Bob's **dog**] started to bark.

The rest of this section will be taken up with an examination of the conditions Landau places on the distribution of NOC. With successive publications, Landau allows NOC in more and more situations. Landau (2015: 97fn1) specifically predicts that bare *-ing* adjuncts should not exhibit NOC, as he thinks that their functional structure is too constrained to support logophoric control. I find this puzzling, as logophoric control is readily available for bare adjuncts as well. Of the examples from Woolf in my introduction, over a dozen are both bare and logophoric. As far as I can see, nothing in particular hangs on this assertion: Landau's theory could easily be changed to take dangling FAs into account. Landau (2020a: 6f.) retreats from this position and acknowledges NOC in bare FAs.

At times, Landau has placed a strong emphasis on the position of the adjunct as the

key factor in whether an adjunct is interpreted with NOC or not (Landau 2003: 481). There is, of course, a tendency for left-adjoined adjuncts to be controlled by things other than the matrix subject more often than right-adjoined adjuncts are, a tendency that has been frequently noted in the literature, but the sentences in (75) show that NOC is not unique to these left-adjoined adjuncts. Landau (2015: 84f.) softens this somewhat by admitting that right-adjoined adjuncts set off by an intonational pause can admit NOC, but the examples in (75) do not seem to require any pause, either. Again, his position on this seems to have changed again by Landau (2020a).

Landau (2017) accepts that NOC does not depend on the position of the adjunct relative to the matrix. NOC is also available even where OC is not ruled out; his new position is that "the *same* adjunct, in the *same* syntactic position, may show this dual behavior" (Landau 2017: 93). He retains the selectional-violation trigger and adds a new restriction, building off what he calls the Jaeggli-Roeper Generalisation (JRG): the idea that an active RatC allows for OC or implicit agent control but a passive RatC allows for only OC (Jaeggli 1986; Roeper 1987). The JRG is demonstrated in the following set:

(82) a. John$_i$ took a vote to $_i$be elected president.
b. *A vote was taken to be elected president.
c. A vote was taken to elect a president. (all from Roeper (1987: 278))

In (82a), the RatC is passive, but the matrix subject (*John*) controls it, so the sentence is acceptable. In (82b), the RatC is passive again, but the matrix subject (*a vote*) cannot control it this time, and another controller is supposedly ruled out by the JRG, so the sentence is unacceptable. And in (82c), the RatC is again active and the matrix subject (*a vote*) again cannot control it, but it does not matter because another controller is allowed when the RatC is active.

But the JRG does not seem to be airtight. All of the sentences in (83) are like (82b) in that they involve passive RatCs that cannot be controlled by the matrix subjects, but nevertheless they are plausibly controlled by what Jaeggli and Roeper would assume are the implicit agents of the matrix verbs.

(83) a. [He asked] the Greek god Apollo what needed to be done in order to be forgiven for his faults.[18] (iWeb)

b. In order to be paid out, the following criteria must be met. (iWeb)

c. Limited enrollment programs have specific deadlines that must be met in order to be considered for the next available start term. (iWeb)

d. Things must be faced, even in order to be forgiven. (iWeb)

In any case, Landau does not actually believe that implicit agents do any controlling, as we saw in section 3.2.3. Rather, implicit agent control is actually NOC for him, so he expects all passive RatCs to prevent NOC (active RatCs, on the other hand, allow for NOC when OC is ruled out due to a selectional violation). This expansion only serves to provide more counterexamples, as we can choose sentences without implicit agents as well. Neither of the following involves OC, yet the RatCs are passive:

(84) a. The following qualifications, among others[,] are essential in order to be considered for a Benihana franchise.

b. Attendance is mandatory at all sessions in order to be certified. (iWeb)

Landau extends the JRG in other ways as well: he claims that all adjuncts supporting NOC, including temporal adjuncts, are sensitive to passivisation (Landau 2017: 98). On top of this, one of his reviewers suggests that copular adjuncts block NOC just as well as passive adjuncts do (Landau 2017: 99). I disagree with both of these observations, as does Green (2018: 38f.), who argues that whatever tendencies Landau identifies here are not hard restrictions. Green provides some invented examples of passive and copular adjuncts that allow NOC, not all of which are successful (?*The house stayed dry during the storm after being smart not to leave the windows open.* (Green 2018: 39, his judgment)). For that reason, I provide my own examples here, first of *-ing* adjuncts in general (85) and then of copular adjuncts in specific (86).

(85) a. While being interviewed, a point was made about one building's

[18] I assume that in (83a) the RatC attaches low, as the sentence is still acceptable when we reword it to eliminate the possibility of high attachment (*The question was what needed to be done in order to be forgiven*).

façade... (iWeb)

b. When being attacked by these enemies, the best strategy involves stealth.

c. [Interviewers can be made inactive.] After being made inactive... any collected data is uploaded. (modified from iWeb)

d. That didn't seem so important after being shot at. (TIME)

e. Since being implemented, there has been much controversy over the way these tests are designed. (iWeb)

(86) a. Despite being tiny, there are a number of hotels...

b. Being experimental, there was no support for floating point operations.

c. Being landlocked, there are no seaports.

d. Despite being informative, there's a certain irreverent style to the track.

e. Without being cruel, it is patently ridiculous to even begin to... (all iWeb)

Landau (2018) steps back and seems to abandon the JRG, based on the observation that you can get NOC in (i) passive verbal gerund subjects and (ii) passive RatCs in sentences in which OC is not possible (*The ship was sunk. The goal was to be promoted.*). Instead, he relies on the [init] feature of Farkas (1988), which marks intentional causers. When the [init] values of the matrix and adjunct subjects mismatch, NOC is allowed (87a). Elsewhere, it is blocked (87b).[19]

(87) a. There won't be any progress without insisting on guidance from the outside. ([-init]/[+init]) (Landau 2018: 1)

b. *There won't be any progress without being guided from the outside. ([-init]/[-init]) (Landau 2018: 2, his judgment)

This does not fair much better; (87b) is fine for me, and NOC can be found with both [+init]/[+init] (88) and other [-init/-init] (89) pairs.[20]

(88) a. And after $_{\neq i}$beating him$_i$ for ten days and $_{\neq i}$promising him$_i$ a pardon,

[19] From what I can see, this is more or less equivalent to Hayase's (2011) 'cognizance scenario' proposal (see section 4.1.3).

[20] Green (2019b) notes the acceptability of [-init]/[-init] but not [+init]/[+init].

Rannam$_i$ confessed to $_i$being an informer.

b. Even while planning my wedding, someone suggested I march to the tune of *Edelweiss*. (both from AMZ)

(89) a. Having received only an elementary education, the simple teachings and colourful ritual had appealed to her. (Stump 1981: 6)

b. Being a budding Sovietologist, it was vaguely ominous. (AMZ)

In his most recent work, Landau (2020a,b) apparently relaxes almost all restrictions on the availability of NOC. He examines nonfinite adjunct[21] clauses in general, and observes that NOC is only available for those clauses that are propositional or have a propositional variant. Children can learn which adjuncts are propositions by observing whether they can host a lexical subject or not. This is basically an updated version of Bresnan (1982: 396f.), in which it is claimed that an XADJ with functional control does not support an optional explicit subject.

Landau's predictions here are generally right (with one exception that I will discuss on p.161). Free adjuncts and temporal adjuncts, for instance, can both exhibit NOC. Free adjuncts have particularly well-documented counterparts with lexical subjects: absolute clauses (90a). Some temporal nonfinite adjuncts allow genitive subjects (90b), as we saw in section 2.2.7, but even those that do not still have finite variants with the same preposition (90c).

(90) a. **His home** being the Ottawa region, the observation rang true.

b. After **his** obtaining his medical degree from the ETSU Quillen College of Medicine, he and his wife ultimately settled back into Knoxville...

c. Danny DeVito came into the cafe while **I** was working the other day. (all from iWeb)

Telic clauses (91a) and infinitivals with object gaps (91b) both allow for lexical subjects as well and both exhibit NOC. Meanwhile, result clauses (92a,b) and stimulus clauses

[21]I will suspend judgment on the term 'adjunct' for the moment, but some of Landau's adjuncts, like stimulus clauses (*I smiled to think of it*), seem to be selected.

(92c,d), do not have propositional variants and do not exhibit NOC.

(91) a. Secondly, in order for **you** to maintain access to that printer, the host PC will need to remain on all the time. (iWeb)

b. ...Gordon bought a car for **him** to run. (iWeb)

(92) a. This practice spread to become well-known.

b. *This practice spread for **its inventor** to become well-known.

c. I blushed to see what they were doing back there.

d. *I blushed for **my mother** to see what they were doing back there.

This further confirms our earlier characterisation of deverbal prepositions as not involving control. As Landau observes, they do not accept lexical subjects and so are not propositions capable of being controlled by NOC. I disagree with Landau's characterisation of these as involving a sort of strict OC from a speech-act projection, but I have already explained why in section 2.2.1.2.

Now for the exception. Integrated Participial Complements do not admit subjects (93a) and yet do allow NOC (93b), as I demonstrated on p.72 in section 2.2.6.

(93) a. John had difficulty (*with Bob) getting someone to back him up. (as IPC)

b. Often there was difficulty getting someone to back him up. (iWeb)

While (93a) is grammatical with *with Bob*, it no longer involves an IPC, as the difficulties no longer have to be narrowly connected with the act of getting someone to back John up. Now, IPCs are not adjuncts, of course, but then again response adjuncts (*He blushed to recall it*) seem to be miscategorised as well.

So Landau's most recent position is that those adjuncts that have propositional variants can exhibit NOC, but OC is still preferred for its smaller structure. NOC is only used when it is necessary or it produces a different reading. From what we've seen, Landau is right that the existence of propositional variants is a better diagnostic for NOC than adjunction height. Although he does not discuss initial free adjuncts with respect to this newest version of his theory, their propensity for NOC could be explained under

it as the result of incremental processing.

But I am not sure whether his TTC as a whole can be disentangled from logophoricity. A large part of the appeal of the TTC is the way in which one concept is used to explain unusual OC for complements and NOC in adjuncts at the same time. His promotion of logophoric control has had an impact on subsequent accounts, however. Next, we will look at one attempt to incorporate logophoricity into a movement-based account of adjunct control.

3.3.3 Against NOC as an elsewhere case

Green's (2018) dissertation, unlike the generative studies we have been discussing so far, treats adjunct control exclusively. Although he touches on a variety of adjuncts, he focuses on two types in particular: temporal adjuncts (with a mix of gerund- and participle-headed complements) and rationale clauses, both of which display a mix of OC and NOC, as was previously pointed out in Landau (2013, 2017).

Green provides evidence against the complementary distribution of OC and NOC by showing that it is not necessary to rule out the former before the latter becomes available in adjuncts. That is, both forms of control are sometimes available not just in the same structure, but also in the very same sentence. In (94), we do not know whether the pool or the perceiver has spent time in the sun. Moreover, both clauses have [-init] subjects, *contra* Landau's (2018) expectations.

(94) The pool$_i$ was the perfect temperature after $_{i,exp}$being in the hot sun all day. (Green 2018: 40; Green 2019a: 2)

The idea that two types of control can simultaneously hold in a sentence, however, is not new. Kortmann (1991: 61), for instance, notes that (95) has to be disambiguated by context alone.

(95) $_{i,exp}$Having communicated my wishes to my wife, the next morning the poor girl$_i$ entered my apartment... (Goldsmith (1766) *The Vicar of Wakefield* as cited in Jespersen 1940: 408)

Here the correct reading involves NOC (i.e., that the narrator communicated his wishes), but this reading can be obtained even though the OC reading is also acceptable (i.e., that a poor girl communicated the narrator's wishes to his wife). A different context would make the OC reading more salient, but in isolation, the sentence is truly ambiguous.

Sentences like (94) and (95) undermine any claims that NOC is a mere escape hatch or 'elsewhere' case. Instead, Green says that both are available, and the choice between OC and NOC is usually made based on parsing preferences. More specifically, OC is preferred for its locality, its syntactic nature, and its relatively low 'cost' under the MTC, which Green uses as his framework. NOC, on the other hand, is favoured when the adjunct is in initial position (a preference that may be syntactic or based in processing), when OC would result in a semantic clash, when an implicit logophoric center is made salient through a verb like *taste* or *seem*, and when the humanity of the controller is made more explicit.

Green's reference to processing factors builds off Boeckx and Hornstein's incremental account of gerundive subjects in embedded clauses (recall (70) and (71) on p.149). Boeckx & Hornstein say that there is a temporary battle between immediate reference assignment (NOC) and low cost (OC). But immediate reference assignment is just one of several factors encouraging NOC for Green, who notes that final adjuncts can also find controllers other than the matrix subject, as in (55) on p.140, repeated here as (96).

(96) The president was elected without considering his competence. (Roeper 1987: 297)

What's more important for Green is that an interpretation of the clause with a salient logophoric controller is available and makes sense. Although Green does not cite Kortmann (1991), he is therefore in alignment with that study (and mine) in saying that the problem of control cannot be explained through structure without reference to semantics and pragmatics.

A large part of Green's dissertation involves examining different adjuncts for how compatible they are with NOC. He says the patterns he finds are, on the whole, better

supported by the MTC over the TTC. Landau (2020a,b) has already provided a reply to this claim, and most of the adjuncts in question are outside the remit of my dissertation in any case. Still, I would like to consider a subset of Green's claims here. He characterises 'speaker-oriented' adjuncts as NOC-only, and he says that telic clauses are OC-only against his expectations. Let's deal with these in order.

The only example of a speaker-oriented adjunct that Green provides is *judging from experience*, an adjunct headed by a deverbal preposition.[22] His explanation is that this attaches to a higher functional projection and is therefore outside the control of any of the matrix elements. As we saw in section 2.2.1, this sort of deverbal preposition, like the speaker-oriented adverbs of Jackendoff (1972: 56-58) and Bellert (1977), is better characterised as oriented to participants in the speech act than as controlled through NOC. While Green recognises that his adjuncts are limited to speech-act participants, he does not recognise that they therefore do not involve NOC.

The distinction between the looser search of NOC and the strict orientation of these items to the hearer or speaker might be less apparent to Green because he does not consider [-human] topics as potential controllers: for him NOC is logophoric control, and logophoric control is hard to distinguish from speaker orientation. But true danglers are also more liable to involve logophoric perceivers other than the speaker and hearer. Compare the danglers in (97) with the speaker-oriented adjuncts in (98).

(97) a. Taking that into account, there was a unanimous decision against reopening the university.

b. Approaching the front of class, several things stood out to John.

(98) a. Considering the circumstances, there was a unanimous decision against reopening the university.

b. Speaking bluntly, several things stood out to John.

With normal danglers in (97), third-person experiencers can easily control. We naturally understand the decision-makers as the ones who are taking things into account in (97a) or

[22]Presumably, Green would not count deverbal prepositions that are more clearly uncontrolled, such as *following* and *according*, as 'speaker-oriented'.

John as the one approaching the front of the class in (97b). With the deverbal prepositions that head the items in (98), on the other hand, things are tied much more closely with the speaker. (98a) seems to imply that the speaker was one of the decision-makers in a way that (97a) does not, while (98b) has to be read either as the speaker being blunt about the matrix clause or as a passage of free-indirect prose in which the adjunct is the narrated character John's parenthetical aside to himself, while the matrix clause involves the narrator's perspective to a greater extent.

This recategorisation is not detrimental to Green's account; it actually helps him in a way. He faced the problem of explaining why Sideward Movement (and hence OC) was ruled out for speaker-oriented adjuncts under his assumption that Hornstein & Kiguchi's (2003) account of gerundive subject control as OC was right (recall footnote 3 on p.112). Green (2019a: 27) recognises that rejecting Hornstein & Kiguchi's approach would be better for his theory, but he does not even have to take that step. Deverbal prepositions do not need to be considered because they are not controlled.

Next come the telic clauses like (99). Green (2018: 99f.) says that they are OC-only despite apparently attaching high.

(99) They$_i$ went all the way to the library only to $_i$find that the doors were locked.

I agree with him that these are only loosely bound to their matrix clauses: this is immediately apparent from the prosodic gap with which they appear. They also resist *wh*-extraction unless they appear with a parasitic gap (100c):

(100) a. *What did Zoe go to London only to forget?
b. *What did you start to prepare dinner only to have go rotten?
c. What did you put in the fridge only to have go rotten?

Green is surprised that adjuncts that appear to attach high like this should be OC-only, and he holds out hope that non-subject control in telic clauses is more marginal for other reasons (Green 2018: 182).

I think that they can accept NOC, but that it is more restricted than the NOC we

find with other adjuncts. Landau (2020a: 8) provides a handful of examples of NOC in telic clauses. I will augment his examples with the following collection.

(101) a. There was a lot of discussion, only to find out that none of us could do anything to stop it.

b. That's a lot of money out the window only to discover that you need outside help.

c. A long-distance call to my parents resulted in a minute of confusion only to find that I was out of credit.

d. My 1st grader tried to make his own stop motion Lego movie last year. It was a lot of work, only to learn that the software we had just wasn't up to the task. (WEB)

e. The fascia was opened, only to find superficial parenchymal injuries which did not require any intervention. (WEB)

f. The opening was secured only to find both lungs collapsed. (WEB)

g. In the month of January 1889, 287 licensed prostitutes of Brussels were examined, only to find 66 with venereal disease. (WEB)

h. In the recent study, 564 menu items from coffee chains were examined only to find that 54% of the cold beverages contained more than half of the recommended daily sugar intake in one evening. (WEB)

i. People in the community they could normally count on to donate were contacted only to learn that they'd already committed to another charity. (learners = contacters, not donors) (iWeb)

j. As much as 8 months have elapsed in recently endemic countries during which no cases were found, only to discover that unsuspected transmission was still occurring. (WEB)

k. It's hard to get into a mode like that which requires a lot of grinding only to pack it up and do it again the next game (WEB)

l. It took a lot of grinding only to have it crack again 6 months later (WEB) (the grinder is not necessarily the haver)

m. That's a lot of money only to end up in a kitchen drawer, isn't it? (WEB)

I think NOC might be less plentiful for telic clauses than for FAs or RatCs because telic clauses are restricted to appearing after the matrix clause (Whelpton 1995: 122).

(102) *Only to come out a Chomskyan, Bob went to Stanford.

Telic clauses must be reinterpreted in initial position, which is possibly only for those that do not appear with *only* (103a). In cases in which *only* is not used, fronted telic clauses become RatCs (103b).

(103) a. Bob went to *Stanford*, to come out a *Chomskyan*. (telic with prosodic emphasis)

b. (In order) to come out a Chomskyan, Bob went to Stanford.

This final-only restriction is relevant because topical control is only readily available in initial position, and even logophoric control is easier to get in that position as well (Landau 2003: 481; Lyngfelt 2009a: 39). The impossibility of initial position for telic clauses might fall out from a variety of factors: Whelpton (1995: 122f.) thinks that they are invisible to the computational component because they are adjoined to an intermediate projection, like purpose clauses but unlike rationale clauses, but final position might also be connected with the way in which telic clauses express unexpectedness.

Regardless of this speculation, telic clauses can involve both OC and NOC because, unlike the other OC-only *to*-infinitives, they do still admit of logophoric NOC, as we saw in (101). Again, this does nothing to undermine Green's approach; in fact he predicts NOC should be found in telic clauses, so it was a problem for him when he found nothing but OC telic clauses.

Now we should attend to some weaknesses that can be traced back to Hornstein and Landau. We saw earlier in this chapter that Hornstein's MTC is less than ideal for independent reasons: it cannot account for all of the data for complement control (such as subject-control *promise* and control shift) and its account of OC in adjunct control only works for a subset of the adjuncts that need explaining. What if we set aside the

particular theoretical apparatus to which Green has hitched his proposal? There are many important points he covers. I believe he is absolutely correct to say that NOC is not the result of a failed attempt at OC, and also to say that semantics, pragmatics, and sentence processing all affect adjunct control. I have outlined the reasons for these beliefs elsewhere in this dissertation, and will continue to do so in the next chapter. And his explanation of why initial adjuncts are more likely to be understood as involving NOC is exactly in line with my own: NOC can be calculated before an obligatory relation is established.

But this leads us to the problem that, like Landau, Green assumes that logophoricity is a hard requirement for NOC with the exception of arbitrary control (Green 2018: 51-57, Green 2019b), and so he does not seriously consider the possibility of continuing from inanimate topics. An example of a [+human] but [-logophor] controller is briefly entertained but left as an open problem (Green 2018: 79-80). The dangler in question is a translated example from Lyngfelt (2000):

(104) Tiger Woods$_i$ was in practice dismissed... But after $_i$having touched the record for the course yesterday, no one dares to disregard [him]$_i$. (modified from Lyngfelt (2000: 32))

Tiger Woods is the one who has touched the record, but the text itself cannot be seen as written from his perspective. As Lyngfelt points out, the adjunct would in fact be ambiguous between control by Tiger Woods and control by the speaker if the adjunct were pragmatically compatible with the latter. Green gives another example of apparent [-human] NOC, but it is of a gerundive subject rather than an adjunct:

(105) Being framed in a light color dulled its natural colors. (p.c. from Hornstein in Green (2018: 20fn4))

Green speculates that this is due to an OC dependency relation with the gerundive subject (recall footnote 3 on p.112) but, as I showed in the list in (45) from p.132, there is plenty of evidence for [-human] topics serving as the controller for NOC in adjuncts, too, when they are in initial position. A complete account of adjunct control must consider what

is happening in those situations, and so Green's account falls short here for the same reason that Landau's does. His rejection of non-logophoric NOC not only reduces the scope of his coverage, but also makes the incremental resolution of control seems like a more straightforward phenomenon than it really is.

I think there is more to say about the hearer's incremental understanding of the sentence. Hearers need to check the wellformedness of the adjunct before the matrix clause arrives, and this requires a guess. What happens when multiple possibilities remain open to the hearer until later in the sentence? Green uses a single-pass attempt at control resolution that is in place as soon as it becomes obvious that a subject will need to be understood; the result is a competition resulting in the victory of either a trace or a null pronoun, at which point the appropriate surrounding structure is put in. But we have seen that clues triggering semantic and pragmatic knowledge about likely controllers continue to flow in to cause hearers to question decisions that have already been made. An initial guess at the controller for an initial free adjunct can be later thrown into doubt: OC can wrest control away from NOC only to have it snatched away again by pragmatic considerations.

But most importantly, a more thorough approach to incremental processing can explain the varying patterns of NOC that we see: fairly free in initial position but more constrained in final position, where logophoric control reigns. Without non-logophoric NOC, we cannot characterise those patterns properly. A more complete description of the various types of anaphoric control that exist will facilitate that characterisation, and so I will turn to that topic before setting out my own account.

Chapter 4

A revised account of adjunct control

In this chapter, I will build up a different approach to the control of free adjuncts. In this view, control is constantly calculated as the hearer tracks the topic as in anaphoric processing. In the case of initial adjuncts, there are similarities with cataphoric processing, but there are also differences. The subjects of free adjuncts are even more likely than pronouns to corefer with the subject of their matrix clause, and particularly unlikely to choose competitors to the matrix subject once it has been presented and accepted as a candidate for control.

Various factors weigh in favour of one reading or another. Initial adjuncts, for instance, are more likely to corefer with previously established topics in their function as bridges between discourse topics. But regardless of the adjunct's position, the experiencer is salient enough to step in and control adjuncts. In all cases, it is difficult to override the pull of the matrix subject, but it does happen if the alternative is highly salient and pragmatically preferred.

Before we address topichood and the tracking of referents, I would like to consider the subjectivity of prose more carefully. When I categorised logophoric control as one type of topical control, I did not intend to diminish its central role or its unique characteristics. A different sort of evidence comes into play when we are determining whether the ongoing text involves a relatively objective telling of events or a subjective account of someone's experience. The salience of the implicit narrator is important, and this is where subjective

control diverges most markedly from other types of topical control: whereas most topics become more salient and therefore more likely to control when they are mentioned more frequently in the previous discourse, control by the experiencer becomes more likely when that experiencer goes unmentioned.

4.1 Control and subjectivity

4.1.1 Experiencers: present but implicit

Let's go back to the collection of sentences from Woolf in ch.1. I will reproduce a typical example from it here.

(1) Driving past Buckingham Palace last night, there was not a trace of that vast erection which she had thought everlasting... (*Orlando: A Biography*)

This adjunct is controlled by the experiencer, a possibility that has been acknowledged repeatedly in this dissertation and in the literature. But it is just as important to note that the two clauses in this sentence function together in a very specific way. The main clause is an at-the-moment report of an impression from the perspective of the observer.[1] The reader here is invited to share Orlando's perspective; indeed, this invitation is made explicit earlier in the same paragraph (*... if we look out the window, as Orlando was doing at the moment, we see that...*). The adjunct serves to describe the conditions under which the observation was made. Compare now one non-dangling revision of Woolf's sentence:

(2) Driving past Buckingham Palace last night, she could not see a trace of that vast erection which she had thought everlasting. (modified from (1))

This sentence might not dangle, but something has been lost. Here, the reader is not invited to share anyone's perspective; the actions and perceptions of Orlando are instead being reported in a matter-of-fact way by the narrator. In (2), we merely observe the

[1] The inclusion of the third-person *she* should not throw us off here; this is free indirect discourse, in which the narrator temporarily conjures up the inner life of the character while maintaining a third-person perspective (see Banfield (1982)).

drive past Buckingham Palace from a detached vantage point, while in (1) we could view the world through another perspective. The situations are the same, but they are construed differently.

This sort of subjective prose also opens up the novel *Harlot's Ghost*:

(3) On a late-winter evening in 1983, while driving through fog along the Maine coast, recollections of old campfires began to drift through the March mist, and I thought of the Abnaki Indians of the Algonquin tribe who dwelt near Bangor a thousand years ago. (N. Mailer (1991))

This particular dangler didn't escape the attention of critics. The first reaction of the vice president of Random House was to say that the error had already been noted but had somehow managed to slip into the first edition. Subsequent editions were to be corrected. This was quickly countermanded by Mailer himself:

> Let's not put the blame on a copy editor. The dangling modifier in the first sentence of 'Harlot's Ghost' was my decision, repeated several times over several months, to keep the sentence intact. I like the rhythm as it stands. I could not find a better one by fixing the sentence grammatically. For that matter, the meaning is clear. We often live in recollections while driving a car; it can even seem as if the recollections are steering the vehicle. Dangling participles can offend a few readers intensely but the damage caused might add up to less that [sic] the rupture occasioned by straightening out the grammar and wrecking the good mood. (AP News (1991))

I agree with Mailer that the sentence should not be changed, but I do not think his excuse about recollections driving a car is a good one. Actually, I think that anyone who did entertain the possibility of recollections somehow driving a car would probably be confused; it was the people who didn't entertain such a possibility who found the sentence acceptable. But more importantly, the acceptability of the sentence is less about the 'rhythm' and more about the subjectivity of the scene being portrayed. The readers share in the narrator's experiences, and it is important, as Mailer says, not to wreck the good mood.

Langacker (1985) notes several means by which the speaker can either tuck away or emphasise her perceptual experience. One important decision is whether to refer to

oneself in an overt or covert way in sentences like these:

(4) a. There is snow all around me.
b. There is snow all around. (Langacker 1985: 138)

(4a) seems to be a factual description of a situation in which the narrator includes herself. The word *me* serves as a representative for the narrator to manipulate in telling the story; the experience has been digested and recreated. On the other hand, (4b) directly evokes the speaker's experience. We do not use a representative because the snow is all around the narrator, and therefore all around the listener, who has been invited to share the perspective. Crucially, Langacker (1985: 139f.) points out that (4a) is better suited to a factual report (he imagines an astronaut using a similar style in a radio report back to Earth), while the latter is more natural when conveying expressions (he imagines a skiier recalling a view from the top of a mountain).

Langacker's styles, as far as I can see, are the same as the reportive and nonreportive styles of Kuroda (2014 [1971]), which are used to explain how adjectives of internal sensations like *atui* can sometimes be predicative of third persons in Japanese. Kuno (1972b) later uses Kuroda's styles to explore the distribution of reflexive *zibun*. In both cases, the nonreportive style allows for other consciousnesses to be temporarily inhabited, and for restrictions on the distributions of these items to be lifted.

In the same way, a subjective passage of English prose will allow us to report our perceptions not directly as in (5a) but indirectly as in (5b).

(5) a. I saw that snow was already falling.
b. Snow was already falling.

The perceiver is 'on-stage' and involved in the scene in either case but explicit in (5a), which is concerned with the observation and what was observed, and implicit in (5b), which is concerned with the experience of the snowfall. Next, let's add initial free adjuncts to those sentences:

(6) a. Stepping outside, I saw that snow was already falling.

b. Stepping outside, snow was already falling.

(6a) is straightforward, as the subject coreference rule is followed. In (6b), however, the free adjunct is directly controlled by the experiencer in the same way that *atui* and *zibun* are exceptionally allowed to be used for third parties in nonreportive Japanese prose. The matrix clause is, in Langacker's terms, highly subjective. The experiencer is part of the scene but is not explicitly referred to. It is more subjective because we need to figure out what the experiencer's role is in the scene in order to understand what is being communicated.

To my knowledge, this explicit connection between subjective prose and danglers was first noted by Yokoyama (2006: 329). Experiencer-controlled danglers, she says, sacrifice normative orthodoxy in order to convey a more immediate psychological or perceptual experience from a shared point of view. Hayase (2011: 102) picked up on the same point independently when she said that the function of danglers was to allow the speaker and the hearer to share one perspective in an act of joint attention.

But danglers are not limited to modernist prose. Their prevalence in technical writing, for instance, was noted by Quirk et al. (1985: 1122f.) and is made clear by Jordan's (1999) collection of examples, some of which are repeated in (7). The authors of these sentences appear to be trying to eliminate all overt agents in the pursuit of 'objectivity' at the price of dangling their modifiers.

(7) a. While measuring the critical impeller speed, the base of the vessel was illuminated from all directions...

b. By characterizing the quality of the pulp at the fibre level, optimization results from this study are...

c. By examining the MoS_2 content, it can be seen that when an oxidized 15% Mo/Al_2O_3 catalyst is sulphided... (all from Jordan (1999: 77-79))

But, paradoxically, by seeking objectivity on one level (the elimination of all human participants), these authors end up making their prose more subjective. After all, subjectivity comes when the experiencer is understood rather than explicit. Yokoyama's vividness

is not the point here; the reason that the examples in (7) are acceptable to many is that the writer and the reader are again sharing one perspective in an act of joint attention. But instead of vivid experiences, we are attending to experimental techniques.

There are, of course, others who have drawn a connection like this between danglers and subjective construal of the situation. We have already seen how Williams (1992) and Landau (2003, 2013) have both built on generativist assumptions of human control of NOC to posit that all non-syntactic control involves a logophoric perceiver. And several authors have pointed to subjectification in the emergence of both logophoric control and deverbal prepositions (Hopper 1991: 30f., Hopper & Traugott 2003 [1993]: 106-109, Brinton & Traugott 2005: 117-120, Killie & Swan 2009: 347-354).

4.1.2 Sharing perspective

There is another type of logophoric control that seems to involve the hearer's experience rather than the speaker's. These are paradoxically difficult to understand despite what is in some ways a generous offer by the speaker to share the perspective of the listener. The problem with (8), for instance, is that it simultaneously imposes the epistemic state of Ronald Reagan, the signee, on the reader (Yokoyama 2018). He is sharing our perspective, which is accommodating of him, but we are expected to know that he is intending to share our perspective, which is, in Yokoyama's (2018: 467) terms, an imposition.

(8) In adopting the United States of America as your homeland, I want to congratulate you as a new citizen of this nation we hold so dear.[2] (Yokoyama 2018: 467)

This is an odd sentence. There is the immediate problem of figuring out why Reagan is congratulating the recipient (is it for adopting the USA or for being a new citizen?), and there is also the problematic preposition *in*. Typically, *congratulate* selects PPs headed by *on* (or sometimes *for*) that are predicative of the object (9a). A PP headed by *in* cannot be substituted (9b).

(9) a. I want to congratulate you on adopting the USA as your homeland.

[2]The original text is from `https://catalog.archives.gov/id/122415740` (Accessed: 2020-Aug-30).

b. ?I want to congratulate you in adopting the USA as your homeland. (both modified from (8))

Preposing (9a)'s complement is only barely possible in marked discourse conditions (10a). A phrase headed by *in* is not selected by *congratulate*, so it can be fronted easily, but it is not typically predicative of the object (10b).

(10) a. ?On adopting the USA as your homeland, I want to congratulate you. (modified from (9a))

b. In reviewing the transactions, I congratulated John by e-mail on his record sales for the month.

So it seems that the underlined phrase in (8) is odd because it is a blend that straddles two possibilities. Like *in* adjuncts, it can be preposed to the left periphery of the sentence relatively easily and can coexist with another apparent selection (*as a new citizen...*). But unlike these adjuncts and like the selected PP *on adopting the USA as your homeland* in the first sentence in (9), it is apparently predicative of the direct object.

In any case, even if this particular sentence should be discarded, there are still many examples of sentences that seem to involve control by the hearer:

(11) a. As a donor to LINGUIST, we would like to thank you from the bottom of our hearts. (AMZ)

b. As a college student or potential college student our judges expect you to use correct spelling, grammar, punctuation, and upper/lower case. (AMZ)

c. Write cheques in whole dollar amounts. By doing this, the figures on your payment advice slip will balance within your cheque. (AMZ)

d. As a fellow member of the APA, we surely agree on the importance of philosophy to the academy and in the wider world. (AMZ)

e. Having gone up and refused to come down, I hereby find you in violation of the law. (AMZ)

f. As an escort, clients will often count on you to serve as their outlet in the gay world. (AMZ)

g. Whether a long-time fan of Beverly Cleary or a newcomer to her award-winning books for children, this eight-book box set of the complete Ramona Quimby series will be a perfect addition to any bookshelf. (WEB)

h. How Employers Could Be Spying On You While Working From Home (title of CNBC YouTube video)

i. At IKEA, clearing your own table at the end of your meal is one of the reasons you paid less at the start! By taking your tray to a tray station we can continue to keep our prices low. (AMZ)

In (11a), for instance, the writer (*we*) seems to try to share the perspective of the reader, who is the donor to Linguist List. But the kindness of attempting to share the perspective of the reader is combined with the selfishness of assuming that the listener can accommodate the shift in perspective. So again, this type of dangler is about manners rather than syntax: if I dangle my participles in this way, I make the unjustified assumption that my audience can read my intentions.

4.1.3 A prototypical dangler

Next, we will turn to Hayase's (2011; 2014a; 2014b) functionalist account of logophoric control. Hayase explains dangling modifiers as motivated by a central prototypical communicative scene. I believe that danglers are more variegated than this prototype suggests.

Hayase (2011) connects speaker-controlled danglers with Langacker's notion of subjectivity, which we discussed earlier in this chapter. For her, the apparent incoherence of the clauses in sentences like (12) causes the hearer to infer an understood perceiver.

(12) Comparing small things with great, there are many considerations operative in railroad tariffs which obtain in those of hotels. (COHA (1885))

Her corpus study of free adjuncts indicates that the verbs in dangling FAs are prototypically agentive and cognitive (e.g., *compare* rather than *seem* or *eat*), while those in the corresponding main clauses prototypically involve states or non-causative events (e.g.,

be or *appear* rather than *decide*).[3] A related reading is ruled out because the adjunct requires an agent that the main clause usually cannot provide. Additionally, the combination of agentive clauses with non-agentive ones undercuts the temporal and causal relationships that might normally hold between the actual states of affair described in the clauses: how could an agentive or cognitive act result in a state that was not caused? The hearer's answer is to posit that a causal relationship holds between adjunct and the perception of what is described in the matrix clause. That is, when the conceptualiser does something, the conceptualiser then perceives something else. Hayase labels her characterisations of the adjunct and matrix clauses as constraints at one point (Hayase 2011: 90), but elsewhere she indicates that she is describing a prototype (Hayase 2011: 96). She refers to this prototype as the 'cognizance scenario' (Hayase 2011: 99), and categorises sentences that evoke this scenario as members of 'the dangling participle construction' (Hayase 2011: 103). Her scenario, then, is supposed to be central to dangling. She uses it to account for danglers like (13a), which she expects to be more acceptable than those with, for instance, non-stative main clauses, such as (13b):

(13) a. Arriving at the park office early in the morning, things looked grim at first. (Hayase 2014b: 118)

b. #Jogging through the park, a brilliant idea suddenly came to me. (Hayase 2014b: 117, her judgment)

For me, the problem is that I find the sentences in (13) to be equally acceptable. The non-stative matrix clause in (13b) does not degrade the whole, at least not beyond (13a). There are many attested examples of experiencer-controlled danglers occurring with matrix clauses involving ideas coming to people, a few of which I have gathered in (14).

(14) a. Pondering these thoughts, a new idea came to me. (COCA (2018))

b. One night after walking their dogs, an idea came to them. (iWeb)

c. Just seeing that list, instantly an idea came to mind... (iWeb)

d. Reading the blog, an idea came to my mind... (iWeb)

[3] Recall p.159, where I pointed out that this is more or less the same observation that Landau (2018) handles with [init] features.

e. An idea came to me while reading your post. . . (WEB)

f. An idea came to me while looking at the tanks on the campus at the University of Utah. (iWeb)

While it is true that danglers that match up with Hayase's cognizance scenario account for many examples, there are also many that fall into different patterns. For instance, there is a whole category of speaker-controlled dangling adjuncts that depict not an agentive action but a state. This state stands in a causative relation to what is depicted in the main clause: by virtue of that state, the event depicted in the main clause is true or more likely. Here too, subjective construal is a possibility right from the start. Note that in (15a) in particular there is also no semantic clash to create a need for a subjective construal by precluding the related reading.

(15) a. Being six feet, a lot of people assumed I was aloof or arrogant (AMZ)

b. Being desperately poor, paper was always scarce—as was ink. (AMZ)

c. As a linguist, this bothers me.

For that matter, it is not clear that Hayase's pattern characterises sentences with danglers and not those with free adjuncts more generally. I cannot be sure without more context, but Hayase's (16) seems to be controlled by the matrix subject and not by an experiencer or speaker:

(16) $_i$Coming from a group whose aim is the simpler life, [such an entry into the marketplace]$_i$ raises some questions. (Hayase 2014b: 122)

Hayase does consider a few sentences that do not match her theory. She claims that although both sentences in (17) fall outside her prototype as they involve causative matrix verbs, (17a) is more acceptable than (17b) because reading a newspaper commands the perceiver's visual attention, and so is compatible with hearing a dog bark, but not with seeing it close its eyes.

(17) a. Reading the evening paper, a dog started barking. Kortmann (1991: 46)

b. *Reading the evening paper, a dog closed its eyes on the sofa. Hayase (2011:

101)

But it seems more likely to me that (17a) is better because a dog barking impinges on one's attempts at reading a newspaper, while (17b) is worse because no such coherent connection can be drawn between the events. After all, (17b) is just as bad when we rewrite it to avoid requiring the conceptualiser to use the same modality of perception:

(18) *Listening to the evening news, a dog closed its eyes on the sofa.

The perceiver is perfectly capable of listening to the news while watching a dog, but no coherent relation is available with logophoric control. Another part of the problem is that we can imagine a dog listening to the evening news without necessarily understanding it. The subject coreference rule takes over completely. (18) offends because the incorrect strategy is irresistable, not because it failed to encourage the reader to imagine an experiencer. When I read (18), I am actually casting about quite desperately for an experiencer, but *a dog* keeps getting in the way.

Ultimately, Hayase is like Landau in that she is looking for something to trigger or license NOC: an instance of incoherence that is overcome by the hearer filling in the background by inference. What I think really happens is that NOC is always there but frequently out-competed. Sentences that match Hayase's construction typically do encourage the NOC reading, but that does not mean the construction is a prerequisite for or even central to non-standard control.

To some extent, Hayase's work makes the observations in Williams (1992) more explicit (though she does not draw the connections from her work to the generative literature on logophoric NOC). Recall that Williams contrasted the sentences in (29) on p.125 (repeated here for the last time as (19)) because Bill's views were being discussed in (a) but not (b).

(19) a. Having just arrived in town, the main hotel seemed to Bill to be the best place to stay.

b. *Having just arrived in town, the main hotel collapsed on Bill. (both from Williams (1992: 299))

There is a natural connection in (19a) between Bill's arrival and his thoughts on the hotel, but the nature of the matrix clause in (19b) suggests that Bill's arrival caused the collapse of the hotel. Hayase would probably say that the matrix verb in (19b) does not follow her stative/non-causative requirement and so does not make the hearer infer perceiver control in the adjunct. But where Williams and Hayase both falter is that (19b) can be made more acceptable in the right context. All we need to do is make the interclausal relation clearer:

(20) Bill's introduction to the town was a rough one. Having just arrived, the main hotel collapsed on him.

The reader expects to experience events which constitute a rough introduction, and the clauses of the ensuing sentence satisfy those expectations in juxtaposition. And so we have a dangler that does not require an apparently incoherent interclausal relation to function, against Hayase's predictions.

Duffley (2014) comes to a similar conclusion about the doubtful contrast in (19). He does not try to salvage (19b), but he does find a similar sentence that is more clearly coherent:

(21) Having apparently forgotten to apply the hand brake, the car ran backwards over *his* left leg. (Duffley 2014: 178)

Duffley takes issue with Hayase's cognizance scenario as well, but I do not agree with all of his objections. He is right to point out that one of Hayase's examples involves a punctual action in the matrix, and so illustrates the narrow range of Hayase's explanation.

(22) Opening the exit to the fifth and top floor, out came wafts of grey choking smoke. (Hayase 2011: 99; Duffley 2014: 184)

But Duffley (2014: 191fn5) later goes too far in claiming that Hayase's use of subjective construal should be set aside because sentences like the following are actually generic and impersonal:

(23) Entering the church, a beautiful and spiritual harmony resounds as the architecture, interior space, and liturgical furnishings reflect the central theme of the "tree of life" (Duffley 2014: 191)

His objection seems like a disagreement over definitions. This dangler is subjective precisely because it presents the speaker's impressions as though they were facts apparent to anyone entering the church. An objective portrayal does not do that; it presents facts as facts, but limits itself to facts. If someone has an impression of something in an objective narrative, it is explicitly tagged as an impression (e.g., *I thought that the windows were beautiful*) so that the receipt of that impression can be reported as a fact. And Duffley's (2014: 184) argument that there is a contradiction in a conceptualiser being simultaneously 'on-stage' and 'implicit' is best reserved for Langacker, not Hayase, as they are his terms. In any case, there is no contradiction: the conceptualiser is on-stage in that she is participating in the scene (e.g., the snow is around the conceptualiser, etc.), but implicit in that she is not mentioned in the sentence itself.

4.1.4 Moving forward

The insights of Hayase (2011, 2014b) are good ones. The subjective inferences she describes form a useful alternative to controller-searching, and she also captures the way in which the logophoric reading falls out from a new construal of the situation. I think that she has identified a typical construction for these logophorically controlled adjuncts (i.e., an agentive implicit subject in the adjunct with a nonagentive explicit subject in the matrix clause), even if it is just one reason of several to dangle.

Hayase (2011) claims Kortmann's strategy fails because it has to deal with the fact that sentences without explicit controllers can still be acceptable. But Kortmann does acknowledge the possibility of searching contextually salient individuals, including the speaker, for a controller. All that Kortmann has to do to answer Hayase's objection is to rank speaker controllers above even explicitly available controllers.

I think that the real problem with Kortmann's strategy is that it involves a search at all. That means we should expect the presence of salient individuals compatible with a

logophoric reading to make danglers better by making that search easier, even if speaker control is already readily available. But the opposite seems to be the case. The more additional references we make to the intended controller, the more astronaut-like the report becomes. A better way of making narrator/experiencer control more likely is by embedding the dangler within subjective prose with direct representations of perceptions (24b), which usually involve fewer explicit references, instead of clinical detached reports of those perceptions (24a).

(24) a. I looked at the sideboard covered with cruets, a basket full of rolls, and a plate of bananas. I was comforted by these sights and started to think about how stories give shape to our lives. Then I realised it might not be possible to tell our lives as stories. Sitting up late at night it seems strange not to have more control. (modified from (b))

b. A sideboard covered with cruets; a basket full of rolls; a plate of bananas—these are comfortable sights. But if there are no stories, what end can there be, or what beginning? Life is not susceptible perhaps to the treatment we give it when we try to tell it. Sitting up late at night it seems strange not to have more control. (Woolf *The Waves*)

The many instances of *I*/*me* in (24a) do not prepare us for the free adjunct, but in fact make it stand out more: the dangler comes as a jarring tonal shift. Compare (24b), in which there is no mention of the narrator. This lack of reference is not a problem because we grow accustomed to seeing things through the narrator's perspective, to assuming an implicit observer who can then be understood as the subject of the free adjunct more easily when it comes. We do not have to search for a controller because the subjective impressions obviate our need to do so.

Yokoyama (2018) also points out that danglers work better in more subjective prose, but her clues are different: bodily/mental experiences, reflexives, referential expressions, and particular choices of lexical items that imply a perceiver. These are all fine, but she actually predicts the opposite of what I have just laid out when she says that the

increased use of first-person reference can make prose more subjective. Truly subjective prose, as I have said several times, assumes the narrator's presence.

It would be interesting to see whether danglers are in fact less noticeable in modernist prose. Ebner (2017: 262) reports that people find danglers quite acceptable in informal settings but also that danglers are relatively unacceptable when they are embedded within more formal types of communication. There is clearly room for a more fine-grained categorisation of texts, however, as the scientific articles used in Jordan (1999) are the very picture of formal prose, and yet dangle unrepentantly.

Of course, I must also point out that both Yokoyama and Hayase assume human logophoric control of danglers. Yokoyama (2018: 466) briefly examines control by the perceiver beside control by the topic, but her definition of topical control involves perceivers other than the speaker who are picked up in the preceding text (and consequently her definition of logophoric control includes only the perceiver who is narrating the text). Like Green, she explicitly subsumes topical control under logophoric control: she calls the perspective-bearing status of the antecedent a requirement.[4] I do the opposite, as my definition of topical control includes nonperceiving controllers (whether human nonperceivers or nonhumans). These necessarily nonlogophoric controllers cannot be accounted for by Hayase's construction or Yokoyama's characterisation. We must acknowledge that adjuncts can also dangle because they track the discourse topic. Next, we will look at how they might do so by considering anaphoric coreference.

4.2 Anaphoric control vs anaphoric coreference

I have spent much of this dissertation emphasising how similar anaphoric control is to anaphoric coreference. Anaphoric control allows us to pick out a salient topic from the preceding context (25a), just like anaphoric coreference does (25b).

(25) a. He passes Wen's grasshopper jar$_i$; sunlight flares off the glass and aluminum lid (screwed on tightly) as though saying see me, see me. ¿Lying on its side

[4]That said, Yokoyama (2018: 466) does acknowledge three danglers that, like Lyngfelt's Tiger Woods example on p.168, do not seem to involve perspective bearers but are still human.

and $_i$sunk into the taller grass, the earth is already absorbing it$_i$, consuming the evidence of its$_i$ existence. (AMZ)

b. He passes Wen's grasshopper jar$_i$; sunlight flares off the glass... As it$_i$ lies on its$_i$ side... (modified from (a))

But control is still different from coreference. As (26) and (27) demonstrate, controlled adjuncts (a) are less flexible than pronouns (b) in picking out a referent from the matrix clause. Pronouns do prefer to corefer with their subjects in many cases, but the relation is not a forced one.

(26) a. Bill$_b$ waved goodbye to his uncle$_u$ when $_b$leaving.

b. Bill$_b$ waved goodbye to his uncle$_u$ when he$_{b,u}$ left.

(27) a. Bill's$_b$ uncle$_u$ said goodbye when $_u$leaving.

b. Bill's$_b$ uncle$_u$ said goodbye when he$_{b,u}$ left.

A better characterisation of adjunct control might be that adjuncts have anaphoric relations to controllers lying outside the matrix clause, but control relations within the clause. In some cases, there is no discourse-based topic available because the adjunct is not only sentence-initial but also discourse-initial. Even in these cases, logophoric control by the narrator is generally available unless it is ruled out by the verb. Still, we rely on the subsequent checking process. If an adequate matrix subject is provided, the subject coreference rule takes over. If a partial semantic clash arises between the predicative adjunct and the matrix subject, the result is a howling dangler. And in the event of a non-competitive matrix subject like pleonastic *there*, the processor glides cleanly over the undercover dangler without confusion (unless one has trained oneself to look for trouble).

Initial adjuncts like these have a corresponding anaphoric phenomenon: **cataphora**, in which the pronoun occurs in a fronted adjunct before the fuller expression with which it corefers. In both cases a calculation of reference has to be made, and in both cases there is a preference for subject coreference. Cataphoric pronouns can dangle like free adjuncts. The default assumption seems to be that the subject of the matrix clause, not the object, is the best place to look: the pronoun *she* in (28) prefers to corefer with

Betty.[5]

(28) When she$_{b>v}$ stood up, Betty$_b$ saw Veronica$_v$.

But what is a preference for pronouns seems closer to a restriction for adjunct control. There are several possible explanations for this. For instance, there might be a syntactic rule tying the understood subject with the explicit one. This is the view I will adopt in this dissertation.

There could also be another explanation in the fact that the understood subject of the free adjunct is much less specific than an explicit pronoun, and this might cause the hearer to lean more heavily on the matrix subject. Pronouns include plenty of information that the understood subjects of free adjuncts do not: the discourse relation between the clauses is necessarily, not optionally, made explicit (e.g., by *when*), the pronoun provides restrictions on controller selection (agreement with person, number, and gender), and tense is present. Adjuncts are different. In some cases, their control can be limited by binding constraints on reflexives (e.g., *seeing herself to be alone*), but there is much less information overall. Of course, this information is missing for verbal gerunds as well, and when those appear as complements of the verb, they exhibit freer control than adjuncts. But being arguments, they are lexically governed, whereas adjuncts are not tied up with the predicate and so their control is guided by the discourse topic instead. This means that their understood subjects are even more likely to corefer with the subject of the matrix clause on which they depend.

So there is some hope that we can dispense with a syntactic rule, but I am cautious about doing so because of the slight control differences that we can see between ADJs and XADJs (see my summary of these differences in section 4.4.3). For now, I will retain the subject coreference rule and hope that a future researcher will be bolder about dispensing with it.

[5]The symbol $>$ indicates this preference (as opposed to the symbol $\rightarrow$, which I use to indicate (potential) reassignment).

4.2.1 Anaphoric processing

Anaphoric resolution is a complex and long-standing problem that has taken up more research space in psycholinguistics and natural language processing than in formal linguistics (Hirst 1981; Mitkov 2002; Poesio et al. 2016). In this section, we will move from accounts based on retrieving particularly salient entities to one based on predicting upcoming discourse (Kehler et al. 2008). When hearers attempt to process initial free adjuncts, they do not work backwards, sorting through what has just been said. Instead, the cotext gives the hearers expectations of what is about to be discussed and how it will be produced.

Most previous work concentrates on anaphoric resolution as a process of recovery. As pronouns arrive, they are processed immediately; hearers try to relate each word to a referent as soon as possible (Just & Carpenter 1980: 341). Of course, hearers cannot stop the flow of incoming material to consider each word at length (and would not want to, as upcoming information could serve to guide decisions (Bard et al. 1988)), so immediate processing is not always possible. But hearers do not hold off in these situations; they make a guess and run with it (Garrod & Sanford 1985; Sanford & Garrod 1989). All of this, I have argued, applies to the control of free adjuncts as well.

We have discussed hard constraints on coreference (agreement, etc.), but there are preferences to account for as well. It has variously been suggested that a given NP is more likely to be the antecedent of a pronoun if it is a subject (Crawley et al. 1990), if it has a parallel function to the pronoun (Smyth 1994; Stevenson et al. 1995), or if it is linearly close to the pronoun (Hobbs 1978: 323f., but see Hitzeman & Poesio (1998) on the potential for long-distance reference).

Not all of this is directly relevant to free adjuncts. It is invariably the subject that is missing from a free adjunct, so there is no need for an approach to take account of parallelism. But free adjuncts do tend to find controllers in recent sentences, and those controllers are typically (29a,b), but not always (29c), found serving as subject.

(29) a. This boat$_i$ is a bit smaller than our top pick. Despite $_i$being new, we think

that the company's generous attention to construction make it a great boat.

b. Our dashboard$_i$ provides real-time insights. Beyond $_i$being transparent, we've made it easy to use.

c. We would totally buy this case$_i$. Besides $_i$being protective, we really like the way it looks. (all modified from iWeb)

But anaphoric processing is not as automatic as this suggests, and we should expect the same to be true for adjunct control. Some approaches, such as that of Hobbs (1979), explain how referent choice can fall out from inference: pronouns are interpreted on the basis of reasoning about the utterance as a whole. For instance, the following sentences are relatively straightforward to interpret even though the pairs are syntactically identical.

(30) a. John$_j$ shouted to Bill$_b$ because **he**$_{j>b}$ wanted his drink.

b. John$_j$ shouted to Bill$_b$ because **he**$_{j<b}$ forgot his drink.

(31) a. John$_j$ punished Bill$_b$ because **he**$_{j>b}$ was vindictive.

b. John$_j$ punished Bill$_b$ because **he**$_{j<b}$ was naughty.

What matters in (30) is that shouting makes the most sense if you want a drink for yourself or if you want someone else to know about a forgotten drink, and what matters in (31) is that when punishment is involved, the punisher tends to be the vindictive one while the person being punished tends to be the naughty one.

A coherence-driven approach, however, cannot be the whole story. In some cases, thinking cannot be responsible because there is no reason to prefer one referent over another (and yet we still do) (32).

(32) Bill met John at the restaurant for a meal. **He**$_{b>j}$ had spaghetti.

Another approach is to imagine that hearers consider which referents are likely to be referred to as pronouns by tracking the discourse focus. Centering Theory (CT) (Brennan et al. 1987; Grosz et al. 1995) carries out this speaker-based tracking through a perpetually updated discourse model. Each new utterance changes the environment in which subsequent pronouns are produced: the discourse entities that are introduced

form a set of forward-looking centres that can all potentially be pronominalised. This set is ranked with the highest centre marked as preferred. CT imposes constraints on pronoun production. If anything gets pronominalised, that preferred centre also has to be pronominalised. The highest forward-looking centre that is realised in a subsequent utterance becomes that subsequent utterance's backward-looking centre, and we can look at a series of these backward-looking centres to see whether they stay the same or change. These observations allow us to characterise subsequent utterances according to their continuity (or lack thereof).

In the way that CT is commonly presented, this ranking does not rely on any of the semantic and pragmatic knowledge required by Hobbs. Instead, it uses syntactic information: subjects are more likely to be upcoming topics than objects or obliques. This makes CT insensitive to the subtle distinctions in Hobbs, but relatively easy to implement computationally because it does not require world knowledge to be available.

Coherence and CT seem worlds apart, and each is incomplete. But they can be reconciled, which is just what Kehler et al. (2008) do in their Bayesian probabilistic model for overt anaphors (33). It combines elements of both approaches.

(33) $$P(referent|pronoun) = \frac{P(pronoun|referent)P(referent)}{P(pronoun)}$$

This model helps us calculate the probability of the speaker referring to a referent given that a pronoun has occurred ($P(referent|pronoun)$). Hearers try to make coherent sense of the language they encounter and predict which discourse entity it is that speakers are about to discuss ($P(referent)$). The CT part involves the use of structural information to tell us which referents are likely to be pronominalised. This is speaker-based, but it also indirectly helps hearers to use the linguistic evidence they encounter to guide their predictions ($P(pronoun|referent)$).

Can this be applied to adjunct control? Although Green believes that adjunct control is logophoric and not anaphoric, he briefly considers whether coherence relations might have an impact on default subject control (Green 2018: 287f.). His answer is cautiously negative: while expectations about upcoming discourse might be present, he claims that

OC will override any interpretation biases that are in favour of non-subjects (e.g., *Donald* in (34a)). The question for him is how quickly OC overrides discourse expectations.

(34) a. Mickey$_i$ got really angry at Donald outside the schoolhouse after $_i$stealing the new red ball he got for his birthday.

b. Mickey$_i$ really angered Donald outside the schoolhouse after $_i$stealing the new red ball he got for his birthday. (both from Green (2018: 288))

I agree with Green that *Mickey* is the thief in both examples. But as we have seen several times, final adjuncts typically do not involve topic control. When we modify these adjuncts to be initial and therefore sensitive to anaphoric control from the cotext, we see that hearers do in fact seem to pay attention to the same sort of coherence expectations that they do for explicit pronouns.

(35) a. Mickey$_m$ got angry at Donald$_d$. After $_d$stealing the new red ball, he$_d$ had run away.

b. Mickey$_m$ angered Donald$_d$. After $_m$stealing the new red ball, he$_m$ had run away. (both modified from (34))

It could be argued that what the hearer is doing here is anticipating the upcoming matrix clause subject and then resolving the adjunct to agree with that subject ahead of time. Disentangling these two possibilities is difficult, but I am encouraged by the fact that danglers are fine despite the increased focus on subject coreference that the objection would entail:

(36) a. Mickey$_m$ got angry at Donald$_d$. After $_d$stealing the new red ball, there was no way to $_m$excuse him$_d$.

b. Mickey$_m$ angered Donald$_d$. After $_m$stealing the new red ball, there was no way to $_d$excuse him$_m$. (both modified from (35))

And so it seems that hearers understand both types of anaphora (explicit pronouns and anaphoric control) by guessing what at the speaker is about to attend to and calculating how likely it is that the speaker would refer to that topic in a reduced way. In the next

section, we will examine adjuncts in initial position, and compare the ones with control to the ones with overt cataphoric pronouns.

4.2.2 Cataphoric processing

Cataphoric pronouns, like initial free adjuncts, look backward to previous context and forward to a matrix clause. Unlike free adjuncts, cataphoric pronouns have been studied in both ways, and have been found to exhibit dual behaviour. If we subtract the behaviour we find in cataphora from free adjuncts, we have a better idea of what it is we have to explain about adjunct control that is not shared with explicit pronouns: how experiencers function as controllers and why there is an increased propensity for subject coreference.

Both free adjuncts (37a) and cataphoric pronouns (37b) can be resolved within the sentence by looking to the matrix subject.

(37) a. $_i$Standing up, Betty$_i$ began to read out her poem.

b. When she$_i$ stood up, Betty$_i$ began to read out her poem.

As I have already pointed out, the tendency towards subject coreference is stronger for adjuncts than it is for cataphoric pronouns:

(38) a. Veronica$_v$ was tired of sitting. $_{v(\rightarrow b)}$Standing up, Betty$_b$ saw her.

b. Veronica$_v$ was tired of sitting. When she$_{v((\rightarrow b))}$ stood up, Betty$_b$ saw her.

The free adjunct in (38a) clearly wants to be controlled by the matrix subject, *Betty*. If it takes that control, it does so at the cost of disrupting an earlier guess at a controller. Cataphoric pronouns are not quite so forceful. In (38b), the cataphoric pronoun *she* is able to corefer with *Veronica* fairly easily even after *Betty* arrives.

Of course, there is no requirement for a pronoun in a sentence-initial adjunct to involve cataphora at all; the matrix clause need not contain a coreferring NP, and everything can be handled through straightforward anaphoric resolution. There is not a hint of dangling in (39).

(39) Bob$_b$ went to the store. When he$_b$ arrived, there were police officers standing

outside.

This sort of observation supports the claim in Kuno (1972a: 302) that cataphora does not involve a distinct mechanism from the one used for normal anaphora. That is, cataphora only works for Kuno when the referring expression represents predictable discourse-old information, which means that the cataphoric pronoun is just part of an anaphoric chain taken out of the context in which it naturally occurs. The fact that the matrix subject is often the same merely points to the way in which subsequent sentences often share subjects. Of course, some cataphoric pronouns are discourse-initial (40a), but this can be argued away as a literary effect like any other discourse-initial pronoun without a suitable antecedent (40b): the reason why such sentences are commonly associated with modern prose is that they create the illusion that the story is already underway by pretending that hearer-old information exists.

(40) a. Many years later, as **he** faced the firing squad, Colonel Aureliano Buendía was to remember that distant afternoon when his father took him to discover ice. (Márquez, *One Hundred Years of Solitude*)

b. **They** kill the white girl first. (Morrison, *Paradise*)

But Kuno's predictability constraint cannot hold up to the counterexamples provided in Carden (1982): not only are there many examples of cataphoric pronouns that do mention an entity for the first time in a given text, but these also include pronouns that corefer with NPs that are indefinite (41a) or quantified (41b) or generic (41c), which eliminates the possibility of salience due to pragmatic factors:

(41) a. When she$_i$ was five years old, **a child of my acquaintance**$_i$ announced a theory that she was inhabited by rabbits. (Carden 1982: 367)

b. When their$_i$ government tenure ends, **many officials**$_i$ simply move to new offices (Carden 1982: 369)

c. No matter how innocent he$_i$ may be in his$_i$ inner soul and in his$_i$ motivations, **the effective mathematician**$_i$ is likely to be a powerful factor in changing the face of society. (Carden 1982: 370)

Carden's examples, however, do not rule out an anaphoric search back for a referent. Indeed, the following alterations suggest that anaphoric references are at least temporarily calculated. Some of these display true ambiguity between anaphoric and cataphoric resolution; it is not clear whether the initial coreference calculation should be abandoned for cataphoric coreference or not.

(42) a. My daughter$_d$ grew up in San Francisco. When she$_{d,c}$ was five years old, a child$_c$ in the neighbourhood announced... (modified from (41a))

b. Members$_m$ of the party knew that their time in power was coming to a close. When their$_{m,o}$ government tenure ends, many officials$_o$... (modified from (41b))

c. Dr Smith$_s$ was known across campus. No matter how innocent he$_{s,m}$ may be in his inner soul and in his motivations, the effective mathematician$_m$ is likely to... (modified from (41c))

Morphological clues can rule out anaphoric or cataphoric coreference altogether:

(43) a. My daughter$_d$ grew up in San Francisco. When he$_b$ was five years old, a boy$_b$ in the neighbourhood announced a theory.

b. My daughter$_d$ grew up in San Francisco. When she$_d$ was five years old, a boy$_b$ in the neighbourhood announced a theory. (both modified from (42a))

Carden, presumably, would have no argument with any of these points. His argument was not that the usual anaphoric processes were not used, but instead that cataphora cannot be reduced to some sort of constraint on acceptable continuations of the sentence that applies after the usual anaphoric process.

A suspension of anaphoric search, however, is exactly what is implied in the subsequent work of Gordon & Hendrick (1997, 1998). They argue that pronouns found in fronted adjuncts, such as the ones above, are not immediately interpreted because the preposition explicitly marks the relation of the adjunct to the matrix clause. Rather, the discourse universe of the listener is temporarily partitioned to hold the adjunct in suspension until the matrix clause is encountered, at which point the partition can be collapsed—the

cataphoric pronoun can only be connected with the preceding discourse through the referring expression in the main clause. It is important to note that this approach does not just discourage immediate interpretation, but explicitly rules it out.

This is a major deviation from the standard position in psycholinguistics, which predicts incremental, word-by-word processing regardless of the structure in which all possible information gets used as quickly as possible to facilitate the prediction of upcoming linguistic material (Tanenhaus et al. (1995), Pickering & Traxler (1998), *inter alia*). If I rely on my own intuitions about processing, it seems to me that suspending one's judgment would involve holding one's breath for a long time:

(44) John went to the store. When he found that he had forgotten his wallet at home, he decided to go home.

According to Gordon and Hendrick's proposal, a reader or listener would have to suspend judgment of who found he had forgotten his wallet until the main clause *he decided to go home* was encountered, when coreference with *John* could be established.

This conclusion was called into question by the results of Filik & Sanford (2008), which found evidence against such a suspension of interpretation. They conducted a study in which readers were presented with text (45–47) that varied in two ways: (i) whether an explicit intersentential antecedent for the pronoun was provided (45a) or not (45b), and (ii) whether the pronoun appeared in a fronted adjunct (46a) or a conjoined main clause (46b). The subsequent main clause usually started with a pronoun, but started with *Bill* when it was preceded by (45b) and (46a).

(45) a. Brian found that the final day of the conference had been pretty exhausting.
b. The final day of the conference had been pretty exhausting.

(46) a. After he returned to the hotel,
b. So he returned to the hotel and

(47) a. he immediately fell asleep.
b. Brian immediately fell asleep. (all from Filik & Sanford (2008: 1116))

When the readers did not encounter an explicit antecedent in (45), they experienced longer first-pass and total reading times at the pronoun in the next clause (46) and the immediately following region, and this effect was found whether or not the pronoun appeared in a fronted adjunct in (46). These results suggest that no special suspending mechanism was called into play in (46a); no matter which environment the pronoun appeared in, it was immediately integrated with previous discourse.

At the same time, readers did find the subsequent processing of the sentences to be easier when the pronoun appeared in a fronted subordinate clause (46a), and so we need to pay equal attention to the intrasentential constraints on coreference relations—there is evidence of syntactic constraints in operation that shape our expectations of what is to come.

There is additional evidence that cataphoric pronouns set up a particular relationship with the matrix subject. Listeners seem to use the existence of a pronoun to choose a structure that they otherwise would not select. Cowart & Cairns (1987) use a prompt that plays on the ambiguity in *packing cases*, which can be headed by either word. If the head is singular (*packing*), we expect the matrix verb to be *is*; if the head is plural (*cases*), we expect *are*.

(48) While [the boxes/they] usually come with several internal partitions, packing cases [is/are]... (Cowart & Cairns 1987: 320)

The adjunct can contain either the full NP *the boxes* or the pronoun *they*. Even with the full NP, there is a slight preference for *are* over *is*, but in the case of the pronoun, responses to *is* become much slower, which indicates that the pronoun, unlike the explicit NP, cues the listener to expect coreference with the matrix subject. This anticipation occurs even in the face of selectional restrictions as in (49a,b) (see van Gompel & Liversedge (2003)) or contradictory world knowledge as in (49c) (see Cowart & Cairns (1987)):

(49) a. When she was fed up, the boy visited the girl very often.

b. When he appeared, the boys immediately greeted the king very warmly.

c. After he'd finished marking the test, the student asked the teacher a ques-

tion.

If gender, number, or world knowledge were sufficient to guide the establishment of coreference, then we would expect control to shift to the direct object in all of these sentences fairly easily. But readers do experience difficulty when these sources of information clash with the default syntactic expectations of subject coreference. This indicates that cataphoric calculations are in fact made.

So it seems that both types of reference, anaphoric and cataphoric, are considered at the same time. This idea was supported by Liversedge & van Gompel (np), which tested the effect of gender mismatch. Readers found sentences like (50) more difficult to read both when the pronoun (ii) was incongruous with the previous context (i), which resulted in increased first-pass reading times, and when it was incongruous with the subsequent matrix subject (iii), which resulted in increased regressions.

(50) The (i) [housemaid/butler] was working in the mansion. Before (ii) [he/she] left, the (iii) [butler/housemaid] informed the [butler/housemaid] about tomorrow's fire drill.

So it seems that readers try to make sense of pronouns in fronted adjuncts in as many ways as is possible. It is not a matter of choosing between anaphoric and cataphoric processing; leaving out either type means leaving out a crucial piece of the machinery we use to make sense of the unfolding text. We should therefore reject any approach to cataphora that does not incorporate both forward- and backward-looking coreference.

How can we apply this to free adjuncts? We have seen that FAs seem to rely more heavily on coreference than pronouns do (recall (38) on p.192). We cannot assume that there is no suspension device for initial FAs; the forward-looking relationship seems stronger than it is for pronouns.

But any suspension device would again involve temporarily putting aside linguistic information, which goes against what processors are generally thought to do (Trueswell et al. 1993; Arnold et al. 2000; Hanna et al. 2003; Gleitman et al. 2007). Furthermore, in the case of FAs, there are fewer cues that one is dealing with a preposed phrase. Recall

the fact that many FAs are temporarily indistinguishable from gerundive subjects, which need to be resolved immediately under NOC/arbitrary control (Lyngfelt 2009a: 40). It is not clear how listeners or readers would be able to know when to suspend the search mechanism. In some cases augmentation helps to disambiguate, but not all.

There is another difference that is even larger: as we have seen throughout this dissertation, FAs are sometimes understood as logophoric, while the only English pronouns that can be understood in that way are reflexives in indirect discourse (Pollard & Sag 1992: 267f.; Culy 1997: 845f.). So our tracing of the topic through cataphor-like processing must be supplemented by the ability to find a controller in the experiencer (recall our discussion of egophoricity on p.139).

In the rest of this chapter, we will consider how the various types of control unfold and interact during the processing of free adjuncts.

4.3 Incremental parsing: What has been done

Danglers are frequently thought to involve more or less successful attempts at amelioration (Kortmann 1991, Williams (1992), Boeckx & Hornstein 2004: 441, Landau 2007: 305, 2017: 100). The idea is that control from anything other than the matrix subject is costly and therefore only to be triggered when this is necessary. This idea is often put in force through an assumption that NOC is only available when OC has been ruled out.

I have contrasted this with the alternative of immediately attempting to establish coreference. There have been a few studies of free adjuncts that have explored this possibility previously. I will summarise each and outline some of the ways in which their views differ from mine.

Ido (2001) looks at danglers through an approach based in Relevance Theory, in which the controller of the free-adjunct subject is determined according to cognitive ease. What his approach amounts to is treating the missing subject of the free adjunct as though it were a null pronoun. The listener continually adapts his guess as to the controller as the sentence unfolds. Ido's reliance on 'cognitive ease' is very informal; he seems to construct

a hierarchy with explicit repetitions of a controller at one end and unspoken logical arguments at the other (e.g., the null agent of a passive). No attention is paid to other clues of relatedness or the results of encountering clashes. Logophoric interpretations are not considered. These are in fact still likely when the controller is not explicitly referred to, *contra* Ido's claims; he does not account for the effect of the ongoing text being written in a way that encourages subjective construal. He also does not account for how the processing of FAs differs from that of cataphora; FAs, as we have seen, are much more likely to corefer with the matrix subject than the object, but this is a mere preference for an overt pronoun.

Boeckx & Hornstein (2007: 256ff.) briefly discuss the effect of incremental processing. According to their theory, the parser prefers to use a trace over *pro*, but it also prefers to interpret empty categories immediately. When the empty category comes before the antecedent, the preferences are in competition. Trace cannot be interpreted until that antecedent is encountered. Green (2018: 68) explores Boeckx & Hornstein's idea and says that initial free adjuncts may be preferentially assigned a logophoric controller before the matrix subject appears. He is working from the assumption that danglers invariably involve logophoric controllers, and so does not consider the possibility of continuing from inanimate discourse topics. Green sees the outcome of the incremental processing as a competition between OC and NOC. Various factors can weigh in favour of one reading or the other, but a decision, once in place, is apparently final. He does not focus on initial free adjuncts for long, and so does not go into what happens when various types of matrix subject are encountered (pleonastic subjects or partially matching referential subjects, for instance).

Finally, Lyngfelt (2009b: 174) comes close to invoking processing order. He notes that initial free adjuncts do not have accessible controllers, unlike ones in final position. Therefore, they must be resolved through the pragmatic context. What he is referring to, however, is structural accessibility: his concern is not the linear processing order but rather the syntactic height at which he supposes the FAs attach. He acknowledges the other possibility, but declines to pursue it: "From a different theoretical viewpoint, the

same contrast between initial and non-initial adjuncts might also be construed as an incremental interpretation effect. However, I will not pursue that path here." (Lyngfelt 2009b: 174fn25). We have discussed a good reason to suppose that attachment height does not explain the data: final FAs and BAs contrast in scope but logophoric control is perfectly available in the latter. And so I will now turn to the path Lyngfelt did not take.

4.4 My analysis

4.4.1 Does the adjunct need control?

Recall Kortmann's factors, which were described in section 2.4. These were put forward as ways in which the hearer becomes aware of the need to search for a controller because one will not be provided by the matrix subject. As I have said, I do not think these factors encourage or discourage searches, but instead prolong or resolve processes that are underway by default. And so they should be seen instead as clues arranged on a linear temporal line according to when they become available. These clues guide the processor as it parses incoming words into structure and resolves anaphoric relations. I assume an interactive model of parsing in which semantic and pragmatic information can influence syntactic structure (Altmann & Steedman 1988, *inter alia*). Multiple structures can be entertained at the same time. The processor will prefer the reading it thinks is more likely and will stumble when those preferences suddenly change with the arrival of new information.

Several of Kortmann's clues are not about selecting a controller, but rather about choosing a different structure with different control requirements. For instance, the adjunct does not require a controller if it is actually headed by a deverbal preposition. In some cases (e.g., *notwithstanding*), an alternative predicative reading is not available, and so additional processing is not required. In other cases (e.g., *considering*), we may have an initial guess informed by the chances of encountering a deverbal preposition, but controlled possibilities cannot yet be ruled out (e.g., *Considering his figure in the mirror,*

he was rather impressed with himself).

The complement of the adjunct will also serve as a clue as to whether a deverbal reading is likely or not (e.g., *Speaking of...* vs *Speaking about...*). This is also when we become aware of adjuncts that only require a pleonastic controller (e.g., *Being Sunday...*). However, these are limited to certain idiomatic expressions (compare *Being evening, the lights came on*). As we saw in 2.2.1, our decision about some deverbal prepositions must wait until quite late in the sentence: *considering*, for instance, may also be affected by whether the matrix is statement of opinion or not.

The position of the free adjunct, then, is not a clue-providing device in itself as Kortmann claims, but rather something that determines the order in which the clues get processed and what one can do with those clues. For instance, if one is dealing with an initial adjunct, then control might be ruled out altogether before we know whether the matrix clause is imperative or whether it provides an unsuitable controller as its subject.

The process of teasing out whether a given adjunct in fact requires control or not is too complex to deal with in a straightforward way. Instead, let us assume that the adjunct in question does need to be controlled. How are we going to determine what kind of control it gets?

4.4.2 The availability of functional and anaphoric control

In LFG, control is traditionally viewed as functional or anaphoric (Bresnan 1982). One clear instance of functional control involves the XCOMP selected by a raising verb (*Bill seemed to eat apples*). This XCOMP is saturated by the matrix subject in a local relation in f-structure without a thought for other controllers. Anaphoric control, on the other hand, is found in closed complements, including verbal gerunds (*Bill mentioned eating apples*). These do not need to be additionally saturated, so SUBJ is a null pronoun. This *pro* can receive control in a free way.

The problem is that we cannot treat free adjuncts in a straightforward way through one type of control. Bresnan (1982: 396f.) characterised them as ADJs that get anaphoric control, but this is too loose. The anaphoric control found with verbal gerunds as ar-

guments means that the gerund can be controlled by the matrix subject (*Bill$_i$ boasted to Sally about $_i$winning the race*) or object (*Bill asked Sally$_i$ about $_i$winning the race*) or something else (*Bill told Sally that $_i$lowering taxes on the wealthy was irresponsible of the government$_i$*). But we have seen many times that the subject, not the object, of the matrix clause controls the adjunct (51a). Apparent object control is coincidental: usually, the logophoric controller happens to be the object of the matrix clause as well (51b). This can be shown to be a coincidence through equivalent matrix clauses without direct objects (51c).

(51) a. While $_{m,*j}$writing her/his dissertation, Mary$_m$ phoned John$_j$.

b. While writing my dissertation, other things were concerning me, too.

c. While writing my dissertation, other things were concerning, too.

The availability of non-standard control (logophoric control as in (51b,c) and [-human] topic control as in (45) in section 3.2.2) shows us that a strictly functional account, as in Mohanan (1983: 650f.), will also be inadequate. More precisely, final adjuncts can be controlled by the subject (52a) or the experiencer (52b), while initial adjuncts have the additional option of being controlled by potentially inanimate topics (52c).

(52) a. I$_i$ phoned John while $_i$waiting for him.

b. There was a problem while contacting them.

c. Product X$_i$ is very popular. Although $_i$produced in a state-of-the-art factory, there were a few problems with availability this year.

Recall that I characterised bare FAs in section 2.2.8.2 as XADJs. According to the standard analysis in LFG, these receive functional control. I will now propose an amendment: I will assume that both functional and anaphoric control are calculated for adjuncts. This is in line with the recent proposals in Green (2018) and Landau (2020a,b) that make OC and NOC available all the time. One key difference between their accounts and mine is that I assume that anaphoric control is not necessarily logophoric. In their proposals, the adjuncts exhibiting NOC are invariably handled with reference to participants in the speech act, while in mine, the adjunct is made to fit with the ongo-

ing discourse model created from the cotext. Logophoric control is particularly available simply because it does not require an antecedent.

We will start with the cases in which the adjunct occurs initially. Language parsing occurs incrementally. Because of memory and processing constraints, assumptions are made as soon as possible; it is not easy to hold items in your head for later linguistic use. The importance of incremental processing becomes even more obvious as we deal with longer or coordinated initial free adjuncts: the unexpected reference switch in (53) is jarring because we have invested in our conclusion about who is dipping a hairy toe into the water.

(53) Bob$_i$ needed to $_i$relax. He$_i$ decided against $_i$watching the news in favour of $_i$running a tub. $\underline{_{i\rightarrow j}\text{Dipping a hairy toe in and } _{i\rightarrow j}\text{feeling the soothing warmth travel upwards}}$, his son$_j$ decided to $_j$slip in before Bob$_i$ could return.

Functional control is not available (or even certain to arrive) at this point, but anaphoric control is always available, so that proceeds immediately. That is, the value of SUBJ for this adjunct is temporarily PRED 'PRO'. A guess will be made at the controller. In (53), this means temporarily assigning *Bob* as the controller of *dipping* and *feeling*.

The guess at an entity will be guided by the set of available topics in focus and also a general idea of how subjective the ongoing discourse is from the constructions leading up to the adjunct (e.g., other danglers or sentences like *The snow was falling all around* that force us to accommodate an implicit on-stage perceiver). We will have expectations of which discourse entity is likely to be discussed next, and also of the chances that the speaker will use a reduced form to refer to that entity.

This initial anaphoric pass is necessary. In many cases, these adjuncts are temporarily ambiguous with other structures that do not involve functional control. Recall from section 2.3.2 that bare adjuncts look very much like gerundive subjects.

(54) a. Eating an apple, Sally did her homework.

b. Eating an apple is a great way to boost your fibre intake.

Even some full adjuncts are ambiguous, although in a different way: the *-ing* word can

be interpreted as the gerundive subject of a finite clause in the complement of a word like *while* (55b).

(55) a. While eating a banana cream pie, they discussed the news.

b. While eating a banana cream pie was fun, cleaning up was not.

So the processor does not just prefer immediate resolution, but actually has no option to hold off from processing (54) and (55) in the hope that functional control by a matrix subject will eventually arrive. If it did, it would be disappointed half the time.

We can be more precise about immediate processing by referring to wellformedness conditions: the f-structure must be complete, coherent, and consistent (Kaplan & Bresnan 1994 [1982]: 649). These conditions make sure that we have all the arguments we need and no more, and also that all attributes match up with unique values. These conditions must be checked on the spot: we have to be sure that there is an entity that can satisfy the requirement for a subject, that our guess at a controller satisfies the semantic requirements of the verb (e.g., a human controller for *Pondering this idea for a little while*), and that there are no incompatible constraints (e.g., the gender of the reflexive in *Seeing herself in the mirror...*). We cannot wait until these conditions are checked globally for the entire sentence (Asudeh 2013).

The result of this early processing of wellformedness conditions can be seen when the satisfaction of these conditions leads hearers to invest in the incorrect reading. In (56a), a student can shout and so the hearer is led along a garden path until *a drunk* is encountered, but in (56b) we are more prepared for another entity to do the shouting because dogs are ruled out.

(56) a. The student walked along the street. Shouting at the pedestrians, a drunk stumbled out of the bar.

b. The dog walked along the street. Shouting at the pedestrians, a drunk stumbled out of the bar.

Similarly, in (57a) the reflexive *herself* does not clash with *the queen* in gender, and so the arrival of *the princess* causes a particularly bad garden path. In (57b), on the other hand,

the reflexive *himself* quickly rules out *the queen* as an antecedent, and so the disruption later on is reduced because we anticipate the involvement of a separate entity.

(57) a. The queen arrived. Reminding herself about the appointment, the princess started to get ready.

b. The queen arrived. Reminding himself about the appointment, the king started to get ready.

Aside from the harder selectional requirements we have just discussed, there is also a preference for human perceivers over non-human perceivers because we tend to think and talk about other people, but this is not absolute. The availability of logophoric control can be enhanced when the subjectivity of a passage is increased, but the availability of topical control goes up with the establishment of a clear discourse topic. Possessives can guide controller choice without placing hard requirements (e.g., *Pushing out his chair...*).

When the matrix subject is encountered, functional control can be tried out. In the case of pleonastic *there*, for instance, it fails and so the anaphoric guess will not be jeopardised (58a). A suitably severe semantic clash will also sometimes result in paradoxically smooth processing (58b). But a partially or completely suitable NP can steal control away; processing is more difficult when the choice is not clear. Some people will use pragmatic evidence to weigh against a reference switch (58c,d), but for others this evidence serves merely to confuse processing. Pragmatic evidence, as we have seen, can continue to flow in to argue for or against a given reading, sometimes disrupting the sentence only when the adjunct-matrix pair is processed as a whole (58e). And, as we have seen several times, even non-danglers can cause disruption: a previously unproblematic anaphoric guess can be unseated by an equally unproblematic functional controller (58f).

(58) a. Traveling by rail, there are many pleasant distractions from the long journey.

b. Driving on the highway, a realisation suddenly came to me.

c. Having paid our bill, the waiter brought our hats. (Visser (1972) as cited in Kortmann (1991: 62))

d. ?Having finished up our wine, the dog will need a walk.

e. Having spent a year treating it as a joke, he has the last laugh.

f. I made my way to the town square. Turning a corner, Bob waved to me.

This procedure can be illustrated using f-structures. Figure 4.1 shows how the second sentence in (59) is constructed.

(59) Jane got up. Leaving, Mary waved.

The intial adjunct, *leaving*, is parsed as involving anaphoric control and resolved to *Jane* so that local wellformedness can be checked (e.g., whether Jane is a mobile entity that can carry out leaving). When the matrix clause arrives, functional control by *Mary* is substituted. Global wellformedness means that the SUBJ of the adjunct cannot receive conflicting values. Many people will proceed as in figure 4.2 to cancel the initial anaphoric guess in favour of subject coreference. But there are many who will end up with the structure in 4.3. Here, the adjunct's subject continues to corefer with *Jane*. This reading might seem unlikely with this spare example, but the right context can make a difference.

(60) Jane got up. There wasn't much time left. Leaving by the back door, Mary waved to her to try to stop her from going, but she decided to ignore her.

What about adjuncts in non-initial position? The key difference here is that functional control can be tried out immediately, and this overwhelms almost all anaphoric control except for logophoric control, which involves immediately available candidates (61a). Non-human topical control is very difficult to find (61b). This is different from what we see with explicit pronouns, which do not involve a functional relationship with the matrix subject (61c).

(61) a. Your site was a great inspiration while (we were) planning our trip.

b. I ordered a widget from them. *They kept me updated while being produced.

c. I ordered a widget from them. They kept me updated while it was being produced. (all modified from iWeb)

Anaphoric control is particularly available when the matrix subject is pleonastic, as in

(Jane got up.) Leaving... *...Mary waved.*

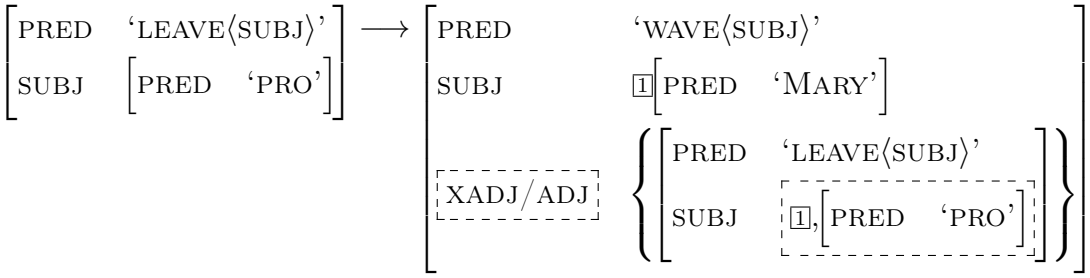

Figure 4.1: Bare FA initial parse (problematic consistency marked)

(Jane$_j$ got up.) $_{j\to m}$Leaving, Mary$_m$ waved.

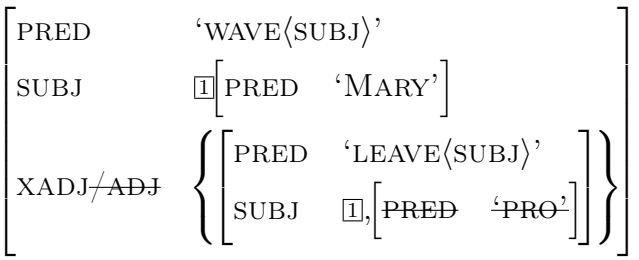

Figure 4.2: Bare FA with functional control (garden-path adjunct)

(Jane$_j$ got up.) $_{j}$Leaving, Mary$_m$ waved.

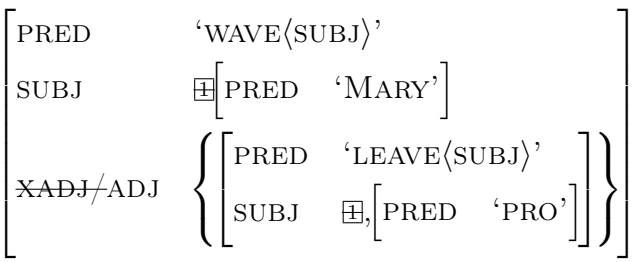

Figure 4.3: Bare FA with anaphoric control (undetected dangler)

figure 4.4 for (62). Even when this adjunct appears in final position in (62b), a functional control relation with expletive *it* is not an option.

(62) a. Walking in Toronto, it rained.

b. It rained walking in Toronto.

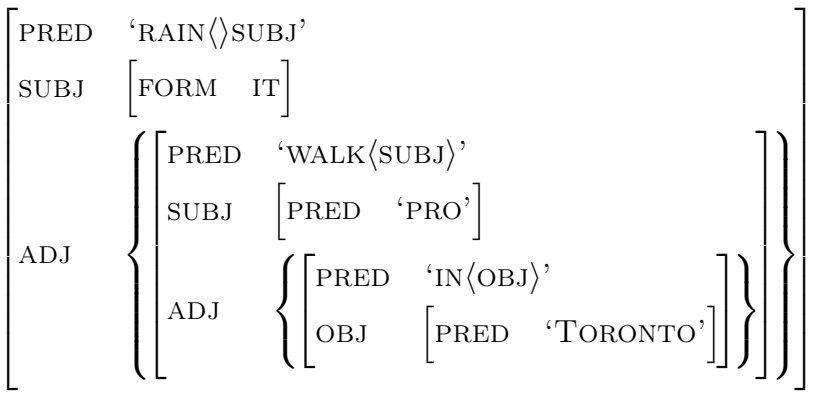

Figure 4.4: Bare FA with expletive matrix subject (undercover dangler)

So the process of resolution is not so much a competition between individual controllers as in Kortmann, but rather a struggle to select the right type of control: anaphoric or functional. Someone who is struggling with an inconsiderate dangler is generally not trying to determine what the controller is but instead is puzzled about which approach to take in understanding the sentence. This is different from resolving pronoun reference in a sentence like (63).

(63) John$_j$ invited Bill$_b$ over for lunch, which is where Sam$_s$ was waiting with Alex$_a$. He$_?$ was 16 years old.

None of the existing proposals in the literature is satisfactory. The MTC relies on configuration to accomplish what we have done through f-structure, and so it has to bring in the entire apparatus of Sideward Movement in order to explain the necessary escape from islands in OC. This apparatus has inadequate crosslinguistic coverage (Fischer 2018), and the MTC has been separately problematised as an explanation of complement control in the first place (see section 3.3).

Next, any account that demands logophoric NOC (Hayase 2011; Landau 2017; Green 2018) simply fails to account for all of the data. This is a matter of empirical coverage,

and so a list of counterexamples will suffice (again, see (45) on p.132).

Finally, any account that involves a search for a controller (Kortmann 1991) runs counter to processing expectations. This is a subtler problem; Kortmann's data coverage is quite similar to mine. But there are a few predictions that we can examine. If Kortmann's model is right, then: (1) subject coreference should result in smooth parsing, as it would rule out the consideration of different controllers, (2) the listener should not show any sign of considering other possible controllers before evidence against relatedness emerges, and (3) when the subject controller is accepted, all other control possibilities should be ruled out.

My approach makes different predictions. Subject coreference should not guarantee smooth processing, as different controllers will be considered for initial adjuncts through anaphoric control even before evidence of unrelatedness arrives. In the event of a garden-path free adjunct, the sentence might not dangle at all and yet still create processing difficulty for the listener. Also, the listener, when presented with a visual-world representation of the situation being described, should show evidence of using various clues in the FA to consider other possible controllers (as was demonstrated for pronoun resolution in Arnold et al. (2000)).

These predictions can and should be tested through eye tracking and timed reading experiments. We can check what happens when readers encounter evidence that contradicts their initial guesses before the matrix clauses arrive, and also what happens when we prepare readers to understand initial adjuncts in different ways through varying contexts. If we find disruption before functional control can be established, that will support my view that initial anaphoric-only control is necessary. The necessity of functional control, on the other hand, falls out from the way in which adjuncts are tied to matrix subjects more than overt pronouns are. I have outlined a few of my ideas for how to carry out this testing in ch.5.

4.4.3 What about the COMP-XCOMP distinction?

Recall that I argued in section 2.2.8.2 that adjuncts headed by *after* contained not XCOMP but COMP. That is, the structure itself does not provide the need for control; rather, verbal gerunds have understood subjects that are resolved through anaphoric control, which is what we also find for verbal gerunds functioning as complements (64).

(64) a. Bill$_i$ boasted to Sally$_j$ about $_i$running the race.

b. Bill$_i$ asked Sally$_j$ about $_{i<j}$running the race.

But *after* adjuncts are like *while* adjuncts in that they resist control by the object (65a,b). Any object control that we do find can be analysed as logophoric control with a coincidental coreferent (65c):

(65) a. Bill$_i$ boasted to Sally after $_i$running the race.

b. Bill$_i$ asked Sally after $_i$running the race.

c. After $_{exp}$running the race, people asked me how I did it.

I will indulge in a bit of speculation here. One possibility is that *after* adjuncts get processed with anaphoric control alone, and any apparent functional control for these adjuncts is illusory, perhaps the result of anaphoric control being linked to a null element. In other words, their attraction to the matrix subject sits somewhere between that of explicit pronouns and that of *while* adjuncts. There is some evidence that these *after* adjuncts are more open to diverse control possibilities than *while* adjuncts are, *contra* Kortmann (1995: 201).

One place to look is the licensing of reciprocals. Both Hornstein (2003: 43) and Landau (2007: 304) predict that partial control should not be found in adjuncts (for Hornstein, this is because meaning postulates from predicates can only be imposed on arguments, while for Landau, this is because at least the right-adjoined variety involves direct predication of the matrix subject). But both *while* and *after* adjuncts can be found with apparent partial control:

(66) a. She was fiercely loyal to him while working together...

b. I look forward to reuniting with the very talented Benavia Jenkins after working together in the U.S. National Team program.

c. What if, while living together, she discovers things about him that she can't stand... (all from iWeb)

What is interesting, however, is that *after* adjuncts appear to optionally license reciprocal *each other*, something that is not available in partial control (Landau 1999: 67-69, Landau 2013: 173). Reciprocals are not licensed in the equivalent *while* adjuncts.

(67) a. After/*while seeing **each other** a few times, he brought up...

b. Upon/*while reconnecting with **each other**, he immediately knew that my health was suffering...

c. By/*while helping **each other** out, you (sg.) can build up a large and satisfied clientele... (all modified from iWeb)

So *while* adjuncts appear to be controlled by the subject somewhat more rigidly here. That said, logophoric control is available with plural perceivers, and so reciprocals are sometimes licensed in *while* adjuncts (e.g., *While working with each other, there were several challenges*).

There is also some evidence that *after* adjuncts, unlike *while* adjuncts, can have their control patterns shifted (68) in a way reminiscent of how pronoun reference is shifted by discourse expectations (69).

(68) a. Yale University took to Facebook to cheer Miller on and to congratulate him$_i$ (after/*while) $_i$winning last night's game. (modified from WEB)

b. I$_i$ congratulated him$_j$ while $_{i,*j}$playing skilfully.

c. I$_i$ congratulated him$_j$ after $_{i,j}$playing skilfully.

(69) a. John$_i$ bragged to Bill$_j$ after he$_{i>j}$ won the game.

b. John$_i$ congratulated Bill$_k$ after he$_{i<j}$ won the game.

That is, we understand (69a,b) as involving different antecedents because we expect John to brag about his own victory but congratulate other people on theirs. Something similar

appears to be at work in the control of the *after* adjuncts of (68a,c).

Finally, there are also some *after* adjuncts with more or less deeply embedded predicative elements that appear to involve OC and NOC. The examples I present here mostly come from the blog posts of Arnold Zwicky. *After* can select complements that are not predicative (*weeks of...*) that themselves contain complements that are (*feeling tired*), and somehow the control gets sorted out in the same way as a normal dangling free adjunct:

(70) a. After weeks of $_i$feeling tired all day long, I$_i$ finally have more energy now. (AMZ)

b. After months of $_{exp}$working on it, it's finally here! (iWeb)

c. After months of $_{exp}$complaining, my husband (an Orthopedic Surgeon) said, "you either go out and find out what is going on or stop complaining". (AMZ)

d. After more than a month $_{exp}$in jail, my mother posted bond. (AMZ, Kipnis (1999) *Angry Young Men*)[6]

Gerunds like these are usually seen as non-controlled, but they might sit on a continuum with free adjuncts. That is, control can be resolved through the subject (70a) or the topic (frequently, the experiencer) (70b,c,d), and the preference for subject control means that subjects that can swap in without a clash can cause howling danglers (70c,d). And when the controller appears as a subject-determiner genitive, the subject itself can present a competitor for control that can be more (71b) or less (71a) successful.

(71) a. In one of his first speeches, attacking the EU for its ban on British beef, Farage$_i$ urged the UK government to "leave this club and get into the real trading world". After two decades $_{i,?j}$as an MEP, [his$_i$ rhetoric]$_j$ has become Conservative party orthodoxy. (GKP: The Guardian (2020))

b. [...Nigel Farage$_i$...] After two decades $_{i\rightarrow j}$as an MEP, [his$_i$ former friend]$_j$ has disavowed all knowledge of him. (modified from (a))

[6]Note, too, that a syntactic explanation for this example that sought to get around *more than a month* would also have to deal with the fact that *after* is an unsuitable augmentor for predicative nonverbal adjuncts (**after in jail*).

There is a subtle difference between these danglers and IPCs. Recall (185) on p.73, which I have reproduced here in expanded form as (72).

(72) a. After two days of drinking, Bob felt horrible.
b. After two days spent drinking, Bob felt horrible.
c. After two days of whining, Bob was ready for a vacation.
d. After two days spent whining, Bob was ready for a vacation.

For regular embedded predicative adjuncts involving *of*, the control is indeed free: there is a very strong probability that (72a) involves Bob's own drinking, while (72c) probably involves someone else, such as Bob's children, doing the whining. But the examples with *spent* involve the participial complements *drinking* (72b) or *whining* (72d), and there *Bob* is the preferred controller every time (and is also the one who is understood to do the spending). Yet they are both embedded under *two days*. And so we see the same two types of control in all of the examples in (73), but with a decreasing need for subject control as we move through the list:

(73) a. After complaining for a month, Bill quit.
b. After a month spent complaining, Bill quit.
c. After a month of complaining, Bill quit.

The persistence of a relationship beyond strict locality in (73b) is difficult to account for under a configurational account because we need to navigate the syntactic structure. The problem seems somewhat easier to handle with a model-theoretic framework like LFG, which allows for uncertainty paths through f-structure (Dalrymple et al. 2019: 652-725).

Hornstein would probably take the decreasing need to understand these adjuncts with respect to the matrix subject to indicate that they do not really involve control at all. But then it is harder to explain the gap between control and pronoun coreference in normal adjuncts headed by *after*:

(74) a. John$_j$ greeted Bill$_b$ after $_{j,*b}$winning the race.
b. John$_j$ greeted Bill$_b$ after he$_{j,b}$ won the race.

It could be that the ongoing gerund-participle merger means that *after* adjuncts, despite being saturated, are frequently parsed as though they were unsaturated. This only works for *-ing*-headed adjuncts; there is no similar merger underway for past participles, which is why they do not get processed as unsaturated and are unacceptable with *after*, unlike what we see with *while*:

(75) While/*after employed with us, Bill spent his free time making models of buses.

4.4.4 A problem

I have presented the absence of inanimate topic control in final adjuncts as a matter of a stacked competition. The matrix subject overwhelms the previously established discourse model, and topic control cannot reach over it to find a controller in previous sentences. The only alternative is logophoric control with readily available discourse participants.

The problem with this account is that there are also matrix clauses that do not present much competition for topical controllers, and yet [-human] control still seems to be ruled out for any final adjuncts:

(76) a. The widgets are produced on this factory line. Being subject to strict manufacturing regulations, there are several QA tests that are necessary.

b. [. . .] *There are several QA tests that are necessary, being subject to strict manufacturing regulations.

c. [. . .] There are several QA tests that are necessary because they are subject to strict manufacturing regulations.

Like all untagged examples, these are invented. (76a) is not great, but we have seen that sentences like it are produced all the time. But there seem to be only two options for the control of an adjunct like (76b): subject control (ruled out by pleonastic *there*) and logophoric control (ruled out by human incompatibility with *being subject to strict manufacturing regulations*). We are clearly discussing widgets, but the adjunct simply cannot find a controller. The overt pronoun *they* has no problem finding an antecedent in the same situation (76c).

My guess at why this is the case is that (76b) lays its cards on the table in a way that (76a) does not. We process the underlined adjunct in (76a) without any idea of whether functional control will eventually arrive—we do the best with what we have. When *there* arrives, it cannot throw off the initial anaphoric guess. In (76b), the preferred functional control (and its failure) is clearly on display, but in (76c), functional control is simply not an option. It does not fail because it never arises as a possibility. This is not a satisfactory explanation, but rather a guess at where an explanation might lie.

Chapter 5

Future research

In this dissertation, I have gathered attested examples and reflected on them in an intuitive way. While doing so, I have hypothesised several times about what might be going on in someone's mind when they encounter a dangler. Those claims are psychological and open to experimental testing. I originally planned to carry out a few of these tests at the end of my studies, but the COVID-19 pandemic prevented that from happening. Nevertheless, I would like to lay out my intentions here.

Some of my speculations about the various types of control that adjuncts demonstrate are also open to falsification through work in historical syntax. Accordingly, I will set out a few ideas for future work in that field as well.

5.1 Experimental work

A model that incorporates incremental processing will predict disruption whenever initial guesses are contradicted by new evidence, such as gender mismatches. To test whether this occurs, sentences with free adjuncts can be preceded by a context-providing sentence that prepares the hearer with a ready controller that is confirmed (1a) or contradicted (1b) by the matrix subject. These sentences can be presented alongside similar ones without free adjuncts (1c,d).[1]

[1]Patrick Sturt (p.c.) pointed out to me the usefulness of baselines without any involvement in control.

(1) a. Frank arrived at the house. Looking in the mirror, he adjusted his hair.
b. Frank arrived at the house. Looking in the mirror, Jane adjusted her hair.
c. Frank arrived at the house. A few minutes later, he adjusted his hair.
d. Frank arrived at the house. A few minutes later, Jane adjusted her hair.

Of course, the unsurprising pair (1a,c) will be easier to process at the subject of the second matrix clause than the surprising pair (1b,d) due to topic continuity. But if the free adjunct leads readers to invest in a subject, then it should be harder to process *Jane* in (1b), the condition with the free adjunct, than in (1d). (1a) and (1c) should be more similar.

Next, reflexives can be used to confirm or contradict expectations early within the free adjunct itself, before the matrix subject has been encountered:

(2) a. Frank arrived at the house. Looking at himself in the mirror, he adjusted his hair.
b. Frank arrived at the house. Looking at herself in the mirror, Jane adjusted her hair.

These sentences make it possible to show that initial guesses at the controller for *look* are made before arriving at the matrix subject, and that an attempt is made at calculating local wellformedness as in Asudeh (2013). When there are no mismatch clues in the free adjunct, disruption does not occur before the arrival of an unexpected matrix subject. If we examine the sentences in (2) in particular, (2a)'s *looking at himself* is immediately understood as controlled by *Frank*, while (2b)'s *looking at herself* creates a mismatch between expectations (*Frank* and *herself*). The mismatch in (2b) is expected to cause processing disruption within the free adjunct, which is earlier than the disruption in (1b) from the previous experiment.

In other words, the hearer is more concerned with establishing coherence as quickly as possible than with determining whether the free adjunct is related to an upcoming matrix sentence. A controller is sought out before Kortmann's (1991) step 1 (as I have interpreted it) has had a chance to operate.

One weakness of the above experiment is that (2a) and any sentences modeled after it must use a pronoun for the second matrix subject. This is unavoidable when introducing the subject ahead of time if we want to avoid the repeated-name penalty (Gordon et al. 1993). And we cannot directly compare the timing of the disruption in (1b) with (2b); the sentences in (1) and (2) involve distinct reading times due to the inclusion of the reflexive. We need to see how each disruption occurs.

But there is a way to demonstrate the effect while avoiding these problems. The third experiment involves continuations of discourse that confound expectations in different ways. None of the following sentences proceeds in the expected way (i.e., continuing to talk about the established discourse topic), but the points at which the unexpected turns become obvious arrive at different times. Usefully, these prompts all employ identical second sentences. The first sentences are the ones that differ.

(3) a. Frank arrived at the house. Looking at himself in the mirror, Bill adjusted his hair.

b. Jane arrived at the house. Looking at himself in the mirror, Bill adjusted his hair.

c. The clock struck 10 o'clock. Looking at himself in the mirror, Bill adjusted his hair.

In (3a), *Frank* and *Bill* have matching genders, and so the reflexive *himself* does not tip the hearer off. In the (3b), however, the mismatching reflexive *herself* is expected to cause disruption earlier on. This will only happen if *Jane* has already been considered as a controller for *looking*; otherwise, no disruption is anticipated until the matrix subject.

It is fairly straightforward to show how the FA is easier to process in (3a), but the difficulty of the FA in (3b) may continue to cause processing difficulty at the second matrix subject, so we can use a sentence like (3c), in which there is no mismatch, to measure how much disruption the garden path in (3a) actually causes.

None of the experiments in this section involves testing how people react when the subject coreference rule does not come into play. There is certainly plenty of work,

however, that could be done in this area as well. These remaining ideas are sketched out in the very broadest of strokes.

Many people accept logophoric control, some accept animate topic control, and fewer accept inanimate topic control. It would not be surprising if these could be arranged on a hierarchy in which nobody who accepted animate topic control, for instance, would reject logophoric control by a referent not explicitly mentioned in the text. This hunch could be supported by empirical studies.

FAs already track the topic for everyone due to the restrictions of linear processing, but not everyone allows the subject coreference rule to override initial guesses. Are there users that experience no stronger preference for subject coreference than what we find in anaphoric processing? That is, does functional control still play a role for everyone?

And can we characterise which population groups are sensitive or insensitive to danglers? As we have seen repeatedly, any discussion of dangling modifiers must consider the speaker and the hearer, and whether they are aligned in their guesses at control. There are a few possibilities. Perhaps a speaker who produces dangling modifiers is not putting herself in her hearer's shoes. On the other hand, perhaps the hearer who does not recognise a logophoric dangler as a legitimate invitation to participate in an event of joint perception is not putting himself in the shoes of the speaker.[2] Does pragmatic ability have an impact on dangler production or dangler detection? The former is difficult to test in a controlled environment, but the latter is perhaps more approachable.

5.2 Corpus work

Although this dissertation was informed by searches through text corpora, a more rigorous diachronic approach might answer several questions that I have had to back away from. For instance, what new roles have FAs taken on since their introduction? Were danglers there from the start? They have certainly been around for a long time:

(4) a. I wrote to you$_i$ / When $_i$rioting in Alexandria... (*Antony and Cleopatra*

[2]Of course, danglers also stand out to people who have linguistic training or exposure to prescriptivists.

(c1607) II.ii.85-86)

b. ...$_i$looking at it against the Sun, it appear'd transparent... (Dryden (1673) *Amboyna* II.i) (both from Rissanen (1999: 321))

Most studies claim that danglers were once more frequent than they are now, but I believe that this is because Kortmann's (1991) results indicating such were mistakenly entrenched as fact. I think danglers appear to be less frequent in many published PDE texts because they are carefully edited out under pressure from prescriptive judgments about dangling modifiers, which started in the 19th century (Rissanen 1999: 321).

The first corpus study of danglers was in Kortmann (1991). It involved (i) a hand-selected collection of written texts (67%) including fiction, news, and academic prose and (ii) Svartvik and Quirk's A Corpus of English Conversation (33%). In total, this corpus comprised just under half a million words of PDE. Kortmann found few danglers. More than 90% of his tokens are compatible with the subject coreference rule, a figure that is restated in Kortmann & König (1992: 679).

Corpus studies of danglers in EModE and LModE can be found in Río-Rey (2002) and Bouzada-Jabois (2017), respectively. Of course, a direct comparison of different studies of different text types with different criteria must be taken with a grain of salt. For one, both of these studies differed from Kortmann's in that they excluded infinitival and nonverbal FAs from consideration. They also involve different proportions of text genres. Another difference particularly worth noting is that Bouzada-Jabois (2017: 45) defines relatedness differently than Kortmann (1991) and Río-Rey (2002): she follows Haug et al. (2012: 144) in that she only counts an FA as unrelated if a suitable controller cannot be found anywhere in the matrix clause. I do not think this is a useful definition of relatedness, as it would mean the following sentences should both be categorised as related because a suitable controller eventually makes an appearance:

(5) a. ?$_i$Covered in mud, the farmer called the pig$_i$.

b. ?$_i$Eating all the dog food in one gulp, I waited for Fido$_i$.

The free adjuncts in (5) cannot be considered to be predicative of *pig* and *Fido*. Another

problem with her categorisation is that it would come to different decisions about (6) (as related or unrelated) based on the presence or absence of *to me*:

(6) Looking at your essay, it seems (to me) that you need to do some proofreading.

Nevertheless, Bouzada-Jabois does indicate in her results whether what she classifies as related FAs involve subject control or not, so her figures can be compared with those of Kortmann (1991, 1995) and Río-Rey (2002).

Study	Period	% of related FAs
Río-Rey (2002: 316-318)	1500–1570	94%
Río-Rey (2002: 316-318)	1570–1640	88%
Río-Rey (2002: 316-318)	1640–1710	83%
Bouzada-Jabois (2017: 190)	1700–1769	82%
Bouzada-Jabois (2017: 190)	1840–1914	73%
Kortmann (1991: 48)	20th c.	92%

Table 5.1: Frequencies of related FAs in Río-Rey (2002); Bouzada-Jabois (2017); Kortmann (1991)

Kortmann's results do not fit in with the others, but neither Río-Rey (2002) nor Bouzada-Jabois (2018) questions them. Río-Rey (2002), for instance, observes that free adjuncts appeared to dangle more often over the course of EModE, but remarks that, at the end of EModE, "the drift toward relatedness that in principle should bring free adjuncts to [PDE] levels [had] not yet started" (Río-Rey 2002).

So why are there so few danglers in Kortmann (1991)? There are a few possibilities. One is that, as I mentioned above, Kortmann is alone in counting infinitival and nonverbal FAs and these might be less likely to dangle. But I think that the primary problem is that Kortmann's sources would have had most of their danglers excised by editors. This possibility matches up with both parts of what is said in Ebner (2017: 260-268), a sociolinguistic study of prescriptivist attitudes that found danglers to have gained in acceptability for British respondents over the last 60 years despite becoming a prescrip-

tive concern only in the 20th century.[3] Those of Ebner's respondents who disapproved of danglers did so without hesitation, an attitude that is conceivably the result of the overwhelmingly negative coverage they are given in prescriptive guides to English usage. I imagine that most editors would count themselves as disapprovers. The rest of us have been getting on with getting used to danglers.

My rejection of this acceptability decline is also supported by the results of Duffley & Dion-Girardeau (2015), a study of PDE danglers that draws on texts from the early 1990s with a broader mixture of spoken and written sources. Approximately 25% of their written sources are unpublished (letters and student writing). Duffley & Dion-Girardeau found that 71% of *-ing* FAs in their texts were related (Duffley & Dion-Girardeau 2015: 231), a figure that matches nicely with the findings of Río-Rey and Bouzada-Jabois. Duffley & Dion-Girardeau remark that their corpus seems to involve more danglers than those of Kortmann (1991) or Río-Rey (2002), but they do not note the way in which their figures validate the trend towards more frequent dangling found in the latter's results. They also do not mention whether the danglers they found were more frequent in the unpublished written sources than the published ones, so we cannot here pursue the question of whether Kortmann's results were unusual because they involved published sources.

But this aside, there are also some important points about the nature of the identified danglers that, to my knowledge, none of the existing corpus studies deals with. As we have seen, deverbal prepositions are perfectly acceptable without subject coreference, and yet the studies do not indicate whether they have been separated from the true danglers. We have also seen that there is reason to separate danglers controlled by a perceiver from those controlled by a salient topical non-perceiver. This information is vital if we are to trace the development of non-coreference over the years.

[3]It is not quite accurate to say that they escaped notice earlier. Sweet (2014 [1898]: 125), for instance, noted examples like *Crossing to the other side of the bridge, and looking over, the current had scooped away the sand* with disapproval, and Bain (1863: 151f.) gave one of the first criticisms of danglers when he said that "there is a very common error with reference to this construction: thus, 'having failed in this attempt, no farther trial was made.' Here the participle 'having' is without a subject, the infinite clause supplying a different subject. The mistake probably arises from confounding the co-ordinating participial adjunct with the participle in the absolute construction: it would be correct to say, 'the attempt having failed, no farther trial,' &c. The participial phrase is then complete in itself."

We have a new problem if we conclude that danglers are used more frequently over time. If danglers tend to cause comprehension difficulty, then there are ongoing mismatches between the speakers and hearers, which would seem to be a suboptimal arrangement. But we should also note the increase in the specific ways in which danglers are used expressively: they allow the speaker to shape the text metalinguistically, and to encode her judgment in line with Traugott (1989) and Langacker (1990). This increase in subjectivity is often seen as the result of grammaticalisation.

The term grammaticalisation is typically taken to refer to the process by which a part of the lexicon becomes part of the grammar. One example of this is *will*, a verb that originally indicated wanting but was grammaticalised as an auxiliary verb expressing futurity (Aijmer 1985). Something similar is at work in the development of deverbal prepositions. When a verb becomes a preposition, it gives a lot up morphosyntactically, becoming much more fixed (Hopper & Traugott 2003 [1993]: 108). But simultaneously, it gains a new sense that serves to encode the judgment of the speaker and organise discourse more broadly (Traugott 1989, Hopper 1991: 30f., Traugott 1995). As we saw on p.42, this has been happening since free adjuncts first appeared in ME and has continued to PDE. Grammaticalisation allows these adjuncts to be used in more contexts than they previously could.

There are some questions, then, about how this grammaticalisation occurred. Did increasing numbers of deverbal prepositions start a process in which the control of free adjuncts in general loosened? That is, do language users generalise across adjuncts, schematising them as a group of constructions (for examples of this, see Trousdale (2008: 33f., 58f.)). Or did the ability to construe free adjuncts as controlled by the perceiver of the scene come first? That is, are individual deverbal prepositions fossilised examples of a more general trend towards viewing things from another perspective? This is the view put forth in Kortmann & König (1992: 679) and Hayase (2014a): danglers become prepositions. Or are the two trends interwoven in a more complex way?

The OED provides us with a rough idea of when deverbal prepositions like (7a) first entered the language. This process seems to have started not long after free adjuncts

emerged. What we need to determine is when sentences like (7b), which involve successful logophoric control to express subjective interiority, came into use.

(7) a. Seeing that Inequal days cannot be the measure of equal motions, it is requisite that those Inequal days be converted to equal. (G. Wharton (1681))

b. Seeing that mummy, everything fell into place. (Movies: *Lego Scooby-Doo!* (2016))

It goes back to at least Shakespeare:

(8) 'Tis given out that, $_{exp}$sleeping in my orchard,
A serpent stung me. (*Hamlet* (c1600) I.v.42-43)

But this is still centuries later than the earliest deverbal prepositions. We would need much earlier instances of logophoric control to weaken the claim that deverbal prepositions potentially fertilised the ground for an abstraction across adjuncts.

There are more questions to ask. When did inanimate control first arise? Was it always an option, or did it arise as a generalisation from the gradual loosening of control suggested above? The earliest example I have in my collection is from the 19th century, but I will not be surprised if earlier examples show up:

(9) Ever since the conclusion of the last war with England, the tariff$_i$ has played an important part in American politics. $_i$Designed at first only to create revenue, the experience of that war taught the importance of using it$_i$ to build up... (COHA (1862))

These questions cannot be answered right now because the data needs to be sorted more finely. We cannot keep on putting adjuncts without coreference into one bin for description. For instance, Rissanen (1999: 322) states that the "roots of the grammaticalisation of these *-ing* forms go back to Middle English, but the final establishment of the prepositional and conjunctive uses seems to take place in Modern English". His examples, some of which were reproduced at the opening of the previous section, draw on a mix of logophoric (10a), deverbal (10b), and topical (10c) examples:

(10) a. My dear master came to me, at entering the chapel, and took my hand.

b. Concernyng our feare, we haue the Apostle that sayth...

c. ...nor could the attempts of Sophia...prevent his going. When gone, we all regarded each other for some minutes with confusion (all from Rissanen (1999: 321))

And then we have to consider the distinction between gerunds and participles. I claimed that *after* and *while* adjuncts were different in section 2.2.7. If the former adjuncts involve verbal gerunds, we might look for evidence that they previously involved a freer sort of control that gradually grew more like the control we find with participles. Any such shift would be in the opposite direction of the general trend towards dangling readings.

I will pause to consider the historical divide briefly here. The discussion will draw on a variety of sources, but I will rely most heavily on Fanego (2004), De Smet (2008, 2010, 2012), Killie & Swan (2009), and Fonteyn & Cuyckens (2014).

Although *-ing* verbs have a wide variety of uses, their morphosyntactic characteristics are similar enough for Huddleston & Pullum (2002: 80-83, 1187-1193) to subsume them all under the title 'gerund-participle'. But as this term implicitly acknowledges, historically there were two separate items: the gerund and the participle, terms that are still in common use.[4] Broadly, gerunds are used like nouns, while participles are used like adjectives.

The earliest OE gerund phrases were NPs headed by deverbal nouns ending with *-ung* or *-ing*; they survive to PDE as nominal gerund phrases (referred to as NPs headed by gerundial nouns in Huddleston & Pullum (2002: 81)) like *the annual gathering of corn*. They patterned (and continue to pattern) like nouns in all respects, including their complementation and modification. But a different variety, the verbal gerund phrase, branched off over the course of ME (Mustanoja 1960, Jack 1988, and Fanego 2004: 7f.).

[4]The terms 'gerund' and 'participle' sometimes refer to the phrase as a whole, and sometimes just its head. In one instance, De Smet (2008: 55) speaks of the gerund as (a) "a (de)verbal form in *-ing*" (b) "whose external syntactic behaviour is that of a noun, but whose internal syntax varies between that of a noun and that of a verb", mixing the two uses. I do not mean to single De Smet out; this ambiguity is everywhere. In an effort to make things clearer for myself, I will use 'gerund' and 'participle' to refer to the heads of 'gerund phrases' or 'participial phrases'.

These allowed adverbs instead of adjectives as modifiers, and were able to take direct objects as complements without relying on prepositions, eventually allowing tense and voice distinctions (Tajima (1983) provides particularly thorough documentation, although the process may have been later and less orderly than commonly suggested (Donner 2008)). In PDE, verbal gerund phrases are internally clausal in nearly all respects, although they retain some nominal character in their ability to include genitive subjects or 'subjectoids'.[5] The case on these, however, is optional:

(11) [them/their] annually gathering the corn

When no genitive subject is present, verbal gerunds, unlike nominal gerunds (particularly those that are definite), are typically controlled by the matrix subject, although they also admit generic control (De Smet 2008: 69-72).

Participles were distinct from gerunds, with an ending in line with participles in other Germanic languages: *-inde/-ende*. It was not until ME that these converged in form with gerunds. Even though modern Germanic languages do not use FAs as liberally as English does, non-clausal adverb-like participles indicating manner were used not only in Old English (Callaway, Jr. 1901: 300f.) but other Germanic languages at the time as well, and thus appear to be native (Callaway, Jr. 1901: 330-9). These participles resisted taking direct objects in their native form (Callaway, Jr. 1901: 351); an equivalent modern example is *He walked away laughing*. But they could head more elaborate structures when used to translate formal literature from Latin: the English participial phrase was used to capture a wide variety of constructions in translation, including PPs, ablative nouns and more (Callaway, Jr. 1901: 301). Much the same thing was happening in other Germanic languages, but Latinate constructions were uniquely grammaticalised in English to form the modern free adjunct (Killie 2006, 2007).

In ME, free adjuncts were mostly found as quasi-coordinates to the matrix clause, with either add/acc or ex/spec relations (Killie & Swan 2009: 338). FAs could be understood to take part in more specific relations (i.e., as temporal or CCCC adjuncts; see Fonteyn & Cuyckens (2014: 25-30)) once these initial quasi-coordinates were grammaticalised as

[5]Pullum (1991) introduces the term to avoid stacking the argument in favour of a clausal analysis.

clauses that could appear in initial and medial positions (Killie & Swan 2009: 346)). At the same time, free adjuncts started to be used not just to express propositions but also to convey the speaker's ongoing commentary on unfolding events.

It should be noted that Callaway, Jr. (1901: 278-285) provides a collection of what appear to be OE free adjuncts with temporal, causal, purposive, concessive, and conditional readings, as was pointed out in Fonteyn & Cuyckens (2014: 16fn5), so it may be that the explosion of FAs in LME added to this preexisting marginal collection of FAs rather than creating a new variety *ex nihilo*. The point is that add/acc and ex/spec outnumbered other readings until LME, at which point more specific readings became more readily available.

Why were participial phrases uniquely expanded upon in English? Killie & Swan (2009) point to two possible reasons. The first is that English has a variety of *-ing* constructions (including participial 'relatives', progressives, non-clausal adverb-like participles, and verbal gerund phrases), and these seem to have fertilised the ground for the free adjunct. The second is that English prescriptivists fighting against foreign influence usually chose to focus their ire on Latinate vocabulary rather than syntax (see Killie (2006: 459-62) for more on how the English purist movement addressed Latinate sentence structure). But Fonteyn & Cuyckens (2014) observe that free adjuncts did in fact experience temporary success in Dutch, where they also developed more informative readings and could be found before the matrix clause. And yet the construction had lost popularity in Dutch by the 19$^{\text{th}}$ century, the period when it was experiencing great success in English. This is in spite of the fact that Dutch prescriptivists had taken no special notice of the construction (Fonteyn & Cuyckens 2014: 38).

Instead, it seems more likely to Fonteyn & Cuyckens that it was only the presence or absence of formal and functional overlap between the verbal gerund and the present participle that was the deciding factor behind the FA's survival in English and its demise in Dutch; all the other Germanic languages that lost their free adjuncts did not have an equivalent to English's verbal gerunds (Fonteyn & Cuyckens 2014).

As we have already seen, *while* adjuncts and *after* adjuncts are nearly indistinguishable

today, the only clear differences being the facts that (i) only *-ing* adjuncts can be used predicatively with the latter and (ii) verbal gerunds admit genitive subjects more readily than FAs do. But we also saw in section 4.4.3 that the current control patterns may be slightly different as well. There seems to be a flexibility for those we have analysed as saturated that is not available to those analysed as unsaturated. If the subtleness of this flexibility is a result of a merger, then we might see historical variation in the control patterns. This variation cannot be drawn out with the current studies, which usually fail to acknowledge the difference between *after* and *while* adjuncts. Kortmann (1991) is an exception, but he ends up discarding the former without comparing them with the latter.

And so in future work, the adjuncts in question should be categorised by whether they have a selecting preposition, which group that preposition belongs to, and what sort of controller is involved (matrix subject, experiencer, animate topic, inanimate topic). This will provide a more adequate foundation for answering the questions that I have raised in this section.

Of course, corpus work is not limited to answering historical questions. We can consider machine learning approaches to coreference and the availability of corpora tagged for anaphoric control relations. Free adjuncts are fairly common constructions (Bouzada-Jabois 2018: 188), and the resolution of adjunct control is important for a variety of natural language processing applications. This last point has long been recognised as true for overt anaphora, which we must be able to process in order to, for instance, correctly summarise texts and extract information from them (Jurafsky & Martin 2009: 696). If adjunct control is at least partially anaphoric, then we should be able to study it in much the same way as we do regular coreference resolution. In machine-learning approaches to coreference, the models that are proposed are frequently trained on annotated corpora (Ng 2010). The problem is that while there are several corpora that have been annotated for anaphoric coreference, even the most recent and thorough of these, the second release of the ARRAU corpus (Uryupina et al. 2020), treats only NPs as markables. As far as I know, a corpus that specifies the understood subjects of adjuncts has yet to be created.

Chapter 6

Conclusion

I would like to finish by returning to the passage from 50 Shades of Grey that started off this dissertation, reproduced here as (1).

(1) Suddenly, he sits up and tugs my panties off and throws them on the floor. Pulling off his boxer briefs, his erection springs free. Holy cow! (E. L. James (2011) *50 Shades of Grey*)

What makes it so bad? The narrator, Anastasia, is providing the perspective on the unfolding events. The owner of the erection, Christian, is engaged in the various activities that are being perceived. Which one pulls off the boxer briefs? Is it Anastasia? That would be the subjective modernist take (*Lying awake, the floor creaked*), in which we are invited to experience the event together with her. After all, there is mention of *my panties*, and the exclamation *Holy cow!* is clearly Anastasia's unspoken reaction to the event. But choosing Anastasia as the controller sets up a clash with the way the scene is described; Christian is the subject of three preceding clauses (sitting up, tugging the panties off, throwing the panties on the floor) and has an established role as the remover of clothing. It is clumsy to switch to Anastasia on an understood pronoun. Do we give up, use the subject rule, and imagine that Christian's erection is liberating itself? We have got three potential controllers, all of which are working in different ways (Anastasia: experiencer, Christian: established topic, Christian's erection: subject).

Control works best when we can rapidly select a controller. This is different from

rapidly searching for a controller. We do not struggle to identify the topic or the speaker; those controllers are readily available to us. The puzzlement we feel when we encounter a bad dangler is not about being lost in a search for the controller, but rather puzzlement over which strategy to take. We might be sure that the author intends one controller over the others, but contradictory evidence can then flow in to problematise that choice. The battle of these strategies illustrates the folly in relying on any one method alone to explain the control of free adjuncts.

The linguistic literature regularly focuses too narrowly on a subset of the data or casts its net too widely. Quite a few studies continue to describe adjunct control as subject-only (the list in ch.1 was very much partial). Some generativists and functionalists (e.g., Landau and Hayase) have taken into account the availability of a subjective or logophoric controller but still fail to engage with the evidence that control can be topical. On the other hand, the answer is also not the search-and-match strategy of Kortmann (1991), which is psychologically implausible.

What we are left with is the incremental way in which this syntactic, semantic and pragmatic information is built up. This information can be seen as establishing constraints that usually point in one direction, but have the potential to conflict. As hearers, we can only work with what we have, and until the end, what we have is partial. But before we get to the end, we can start to understand a free adjunct in light of the type of text within which it is embedded, the potential controllers which that text provides, and the broader communicative scene.

This has to happen quickly because of the limits of our short-term memory (Miller 1956). It is well-known that linguistic material does not persist as long as semantic information (Sachs 1967); we must process that material as rapidly as possible before it vanishes (Christiansen & Chater 2015). Rather than holding the material in limbo in the hope of parsing things perfectly, we come up with an analysis by using all the informational resources we can bring to bear on the task.

A discourse-based account of adjunct control could sit alongside a semantic account of complement control along the lines of those proposed in Sag & Pollard (1991) and

Culicover & Jackendoff (2005), both of which have less to say about adjuncts because they are not connected with the main verb's lexical semantics. A thorough account of control, as I have repeatedly said, is well outside the scope of this dissertation, but the results of this dissertation and the array of control patterns found in Duffley (2014) both suggest that the account we eventually arrive at will be an account that gives syntax a smaller role than it commonly plays.

Danglers involve ambiguity, and ambiguity is often seen as a shortcoming of language. It has even been argued to show that language is not particularly suited to communication:

> The use of language for communication might turn out to be a kind of epiphenomenon... If you want to make sure that we never misunderstand one another, for that purpose language is not well designed, because you have properties such as ambiguity. (Chomsky 2002: 107)

As Piantadosi et al. (2012: 281) note, Chomsky gets things exactly wrong here. People are actually quite good at sorting out ambiguity, and we can rely on that ability to make our communication more efficient than it otherwise would be. In other words, ambiguity is an acceptable price to pay for brevity, especially when we consider that sentences that are ambiguous in isolation are often easy to process when placed in context. In fact, *contra* Chomsky, the fact that language has ambiguity is a sign that it is actually well designed for the purpose of communication. Language producers should not be seeking to communicate things that do not need to be said: if the information is readily available from context, then we do not need to present it again redundantly. Instead of overwhelming the bandwidth of the communication channel in an attempt to be unambiguous, we would do better to expect our brains to take advantage of context and work perhaps a little harder at processing compressed communication.

Even without danglers, ambiguity with adjuncts is already rife. We must employ our ability to resolve adjunct control through pragmatic clues even when the adjuncts obey the subject coreference rule:

(2) How do I get my child to listen without yelling? (WEB)

There are two clauses here and so there are two legitimate subjects that could provide

control for this adjunct. We have to figure out whether it is the parent or the child who should not be yelling. The answer cannot be decided simply by looking at whether parents or children are more likely to be selected by *yelling*—both can yell, so both controllers are available. Furthermore, we all want to reduce yelling by any party, so superficial pragmatic knowledge is not immediately helpful. What shifts control in favour of the parent is the matrix verb *listen*; control would shift the other way if the verb were instead *talk*. That is, the goal that is more salient with *listen* is the child listening while the parent uses a quiet voice, but the goal that is more salient with *talk* is the child successfully communicating with a quiet voice.

Danglers are singled out for censure, but even the worst ones generally do not cause any more confusion than the dangler from *50 Shades of Grey*, and most cause significantly less. They might be ambiguous or misleading in isolation, but they are rarely noticeable when embedded in context, except by those who have trained themselves to be on the lookout for them and perhaps do not allow themselves to use all the pragmatic resources that are available. This does not excuse the bad ones, which result from inadequate consideration of the reader, but it does explain why they are not going away. Writers and speakers will continue to attempt to make their communication as effective as possible, while their readers and hearers will continue to stumble because those writers and speakers cannot put themselves completely in the shoes of those who have to parse what they have created. We might not always be effective in our brevity, but we will go on trying to be brief all the same.

Appendix A

Abbreviations

add/acc	addition/accompanying circumstance	12
BA	bound adjunct	45
CCCC	cause, condition, concession, or contrast	12
COMP	saturated complement	84
CT	Centering Theory	189
ex/spec	exemplification/specification	12
FA	free adjunct	9
FPC	fixed predicative conditional	59
IAC	implicit agent control	123
IPC	integrated participial complement	70
JRG	Jaeggli-Roeper Generalisation	157
MAX-QUD	maximal question-under-discussion	57
MDP	Minimal Distance Principle	111
MTC	Movement Theory of Control	110
NOC	non-obligatory control	112
OC	obligatory control	112
PPP	predicative participial phrase	51
RatC	rationale clause	10
RRC	reduced relative clause	51
TTC	Two-Tiered Theory of Control	110
XADJ	unsaturated adjunct	84
XCOMP	unsaturated complement	84

Appendix B

Corpora

COCA	Davies, Mark. 2008–. The Corpus of Contemporary American English (COCA): One billion words, 1990–2019. Available online at `https://www.english-corpora.org/coca/`.
COHA	Davies, Mark. 2010–. The Corpus of Historical American English (COHA): 400 million words, 1810–2009. Available online at `https://www.english-corpora.org/coha/`.
GloWbE	Davies, Mark. 2013. Corpus of Global Web-Based English: 1.9 billion words from speakers in 20 countries (GloWbE). Available online at `https://www.english-corpora.org/glowbe/`.
iWeb	Davies, Mark. 2018–. The 14 Billion Word iWeb Corpus. Available online at `https://www.english-corpora.org/iWeb/`.
Movies	Davies, Mark. 2019–. The Movie Corpus: 200 million words, 1930–2018. Available online at `https://www.english-corpora.org/movies/`.
SCOTUS	Davies, Mark. 2017–. Corpus of US Supreme Court Opinions. Available online at `https://www.english-corpora.org/scotus/`.
SOAP	Davies, Mark. 2011–. Corpus of American Soap Operas: 100 million words. Available online at `https://www.english-corpora.org/soap/`.
TIME	Davies, Mark. 2007–. TIME Magazine Corpus: 100 million words, 1920s–2000s. Available online at `https://www.english-corpora.org/time/`.
TV	Davies, Mark. 2019–. The TV Corpus: 325 million words, 1950–2018. Available online at `https://www.english-corpora.org/tv/`.

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