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STRUCTURAL SOURCES OF ANAPHORA AND SAMENESS

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For my family

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ABSTRACT

Definite descriptions may give rise to anaphoric interpretations. Addressing this, work in semantics has led to syntactic claims that anaphora-encoding indices are syntactically represented in the DP (i.a. Elbourne 2005; Schwarz 2009). An open question is, however, how these indices interact syntactically with another type of anaphoric element within the DP: modifiers. An example of one such modifier is *same*, which readily participates in anaphora cross-linguistically.

In this dissertation, I address this interaction by investigating the morphosyntactic properties of anaphoric DPs both with and without *same*. Rejecting the null hypothesis that *same* is simply a modifier that appears in an otherwise unchanged DP syntax, I argue that, while anaphoric definite descriptions do in fact house indices in their structure, anaphora with *same* arises from a different source: *same* is a degree head that encodes anaphora by selecting an index of its own – a common trait of degree elements more generally. This proposal leads to testable predictions, which I show to be borne out with data from German and from fieldwork on Washo, a Native American isolate.

Crucial to the treatment of *same* as a degree head is an account of its use in introducing *as*-relatives. I argue that while the degree head *same* selects for an index on its anaphoric use, an *as*-relative may occupy the same structural position in cases of clausal modification, obviating the need for an antecedent. I give an analysis of *as*-relatives assuming a matching structure of relative clauses, and further relate this type of embedded clause to restrictive relatives introduced by *same*.

Finally, the claim that *same* is a degree head rather than an adjective raises pertinent questions about the nature of inflection. The dissertation therefore addresses problems posed by German for current accounts of nominal concord, which are presented from degree modifiers of various types. I argue for a postsyntactic account along the lines of Norris (2014), for whom inflection is achieved by the insertion of Agr nodes onto individual heads post-syntactically, but argue instead that Agr is inserted phrasally, at DegP, which I show to account for a wide range of inflectional patterns.

In sum, the dissertation addresses three core topics, concerning: i) the way anaphoric interpretations arise from distinct structural sources, both within and across languages; ii) the relationship between individuals and degree expressions; and iii) the nature of attributive degree modification.

GLOSSING CONVENTIONS

1,2,3 = 1st, 2nd, 3rd person

ADJ: adjectivalizer

ATTR: attributive

ACC: accusative

CAUS: causative

COMP: comparative

COP: copula

DAT: dative

DEF.AGR: definiteness agreement

DEM: demonstrative

DEP: dependent mood

DOM: differential object marker

DIST: distal

DU: dual

EMPH: emphatic marker

ERG: ergative

EQTV: equative

IMP: imperative

IND: independent mood

INT.FUT: intermediate future

INT.PST: intermediate past

LOC: locative

NEG: negation

NMLZ: nominalizer

NON.NOM: non-nominative

OPT: optative

PL: plural

PRO: pro-form

PROX: proximal

PRT: particle

RED: reduplication

REL: relative pronoun

REST: restrictive

SEQ: sequential

SIM: similative

SR: switch reference

SUB: subjunctive

SUP: superlative

UN: unexpressed prefix

CHAPTER 1

INTRODUCTION

1.1 What this dissertation is about

This dissertation is about the structural sources of anaphora and sameness in natural language. Of particular interest is the way in which the structures that give rise to anaphora – both across independent clauses and subordinate clause boundaries – may differ, despite their apparent similarity on the surface. Consider the examples in (1) and (2), both of which exemplify cases of cross-sentential anaphora with an indefinite antecedent:

(1) Sarah saw *a woman*$_i$ walk past. She then saw **the woman**$_i$ again, just moments later.

(2) Sarah saw *a woman*$_i$ walk past. She then saw **the same woman**$_i$ again, just moments later.

While the addition of *same* in (2) may seem like a trivial modification of the anaphora in (1), I show in what follows that the difference between these examples is not as simple as it might seem.

The study of anaphora and sameness has a long tradition. Inquiry into what it means for two objects to be identical – precisely the meaning encoded by individual anaphora – has engaged philosophers going back at least to the work of Gottfried Leibniz and his formulation of what is now known as Leibniz's Law. One part of this law, the principle of the *indiscernability of identicals*, defines what it means for two objects to be identical, and is shown in (3):

(3) Indiscernability of identicals

$x = y \rightarrow \forall F[F(x) \leftrightarrow F(y)]$ *Discourse on Metaphysics*, 1686

This line of research has investigated what it means for two objects to be identical, which, in the case of (3), is conceived of as identity across all properties of those objects. This dissertation is not about that. Rather, this dissertation addresses the question of how natural language encodes identity and sameness between *syntactic objects*. The particular domain of investigation is arguably

one of the purest expressions of identity in grammar: anaphora. While there has been much work on this very question within the field of semantics, considerably less attention has been paid to this topic from the syntactic side of things. A large part of this dissertation is therefore dedicated to evaluating recent semantic claims about the structure of the DP against structural clues left behind by the syntax and morphology. I show that we emerge with a positive result.

The contributions of this dissertation are both analytical and empirical in nature. The analytical contribution, broadly speaking, is the improved understanding of the structure of anaphoric DPs and the way in which the modifier *same* fits into the picture. The understanding of the structure of anaphoric definites is improved by a proposal for English that is supported first by morphological evidence from German, and then by the behavior of Washo, a Native American isolate. The behavior of the modifier *same* is better understood through the proposal that it is a degree element that can be used to equate individuals, rather than degrees. This in turn leads to a re-thinking of the connection between degrees and individuals that is again supported by Washo, a language argued to lack gradable expressions (Bochnak 2013, 2015). Other analytical contributions include the improved understanding of *as*-relatives embedded by *same*, which have been widely understudied in comparison to other types of embedded clauses, and the relationship between *as*-relatives and restrictive relatives. Finally, the proposal made to account for adjectival inflection on degree modifiers in German leads to a unified account of a variety of inflectional patterns, and brings previous syntactic accounts up to date with new insights achieved through the framework of Distributed Morphology.

The empirical contribution comes largely from the extension of the theory to Washo. While much of the dissertation recasts a new proposal onto already-known data, the success of the application of the proposed analysis to Washo is important in several ways. The Washo data not only provide cross-linguistic support to the general idea that indices are syntactic objects, but also for the claim that pronouns are best thought of as a type of definite description in disguise (Postal 1967; Elbourne 2005). The finding that Washo, a language shown to lack degrees also lacks a lexicalization for *same*, reveals moreover the contribution of careful fieldwork on even minority

languages in the testing of linguistic theory, as well as the role it can play in the identification of possible variation.

1.2 Anaphora and DP structure

The study of anaphora aims to explain how the dependency between referring expressions is encoded in the grammar. A common approach to indicate anaphoric dependencies in surface representations is by means of an *index*: part of a referring expression that constrains its interpretation. For example, in (1), the pronoun 'she' is subscripted with the index *i*, indicating that it must be co-referential with its antecedent, 'a woman,' which bears a matching index.

(4) Sarah saw *a woman*$_i$ walk past. She then saw **her**$_i$ again, just moments later.

Notably, in addition to pronouns, nominals occurring with the definite article *the* (henceforth *anaphoric definites*) can also refer back to to an indefinite antecedent, as in (5):

(5) Sarah saw *a woman*$_i$ walk past. She then saw **the woman**$_i$ again, just moments later.

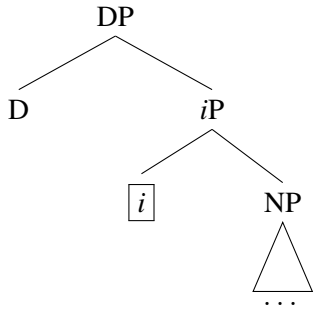
Surprisingly, while the use of indices is extremely widespread in the literature, their nature is still not well understood. To date, very few explicit hypotheses have been formulated about what exactly indices are. For example, Fiengo & May (1994) offer the following formulation to explain the notion of *coreference* between nominals, which relies on the presence of indices:

> Suppose a domain of individuals D, and suppose that we define σ as a (finite) sequence of those individuals D, assigned to the positions of σ. Let $\sigma(i)$ stand for the i^{th} position of σ. We then intepret NP$_i$, that is, an NP bearing an occurrence of the index *i*, as picking out $\sigma(i)$, the i^{th} position of σ. This NP will refer to the individual assigned to that position. This will be so for *all* NPs that bear occurrences of the index *i*: thus, in that each pick out $\sigma(i)$, they will be coreferential.
>
> Fiengo & May (1994: 6)

Crucially, such a formulation makes no explicit claim as to how indices are encoded in nominal expressions, it merely states that an NP can bear an index.

In the first part of Chapter 2, I investigate whether there is structural evidence that indices should not be viewed as notational devices after all, but rather as syntactic objects encoded in the structure of anaphoric definites, a claim that has been made in recent semantic literature, most notably by Elbourne (2005), Schwarz (2009), and Simonenko (2014), as well in some of own previous work (Hanink 2016, 2017). These authors argue that anaphoric DPs give rise to an anaphoric interpretation by virtue of a referential index encoded in their structure.[1] This investigation results in my proposal of the structure given in (6), which I motivate with morphosyntactic evidence from German first discussed by Schwarz (2009).

(6)



In the second part of Chapter 2, I give evidence for this structure based on an apparent morphological anomaly observed in anaphora involving *same* in German. In Chapter 3, I motivate the structure further by providing evidence for structural complexity in anaphoric DPs in Washo, lending cross-syntactic support for the notion that indices are syntactic objects.

1.3 Same is a degree head in anaphora and in relativization

Given the claim that indices occupy a structural position within the DP, it becomes natural to investigate what the interaction might be between these indices and other nominal modifiers that

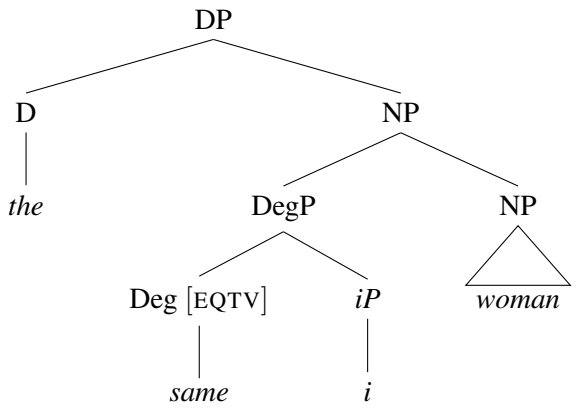
1. It is important to note that the domain of this investigation begins therefore with the examination of *unbound* instances of anaphora, i.e., instances of coreferential interpretation not covered under the Binding Theory (Chomsky 1982).

seem to contribute an anaphoric meaning. In the second part of Chapter 2, I therefore extend the investigation of anaphoric DP structure to cases of anaphora involving the modifier *same*, as exemplified in (7):

(7) Sarah saw *a woman*$_i$ walk past. She then saw **the same woman**$_i$ again, just moments later.

I argue that – despite superficial similarities between the two – anaphora with *same* arises from an independent structure from that found in the type of anaphoric DP discussed in the first part of the chapter. To do so, I build on work by Alrenga (2007), in which he argues that *same* (in one of its uses) is in fact a type of degree head that measures the degree of *similarity* between two objects (as compared to a comparison of some other measure, such as length, height, etc.). Building on proposals for other types of anaphoric degree expressions (most notably, those by Landman 2006 and Anderson & Morzycki 2015 for *such*, and Alrenga et al. 2012 for comparatives), I show the resulting structure that I propose for anaphora with *same* in (8), in which *same* heads an equative degree phrase that selects for an index as its complement:

(8)



Further evidence for the status of *same* as a degree head comes from the alternation of anaphoric *same* with a use of *same* that introduces an *as*-relative, as exemplified in (9).

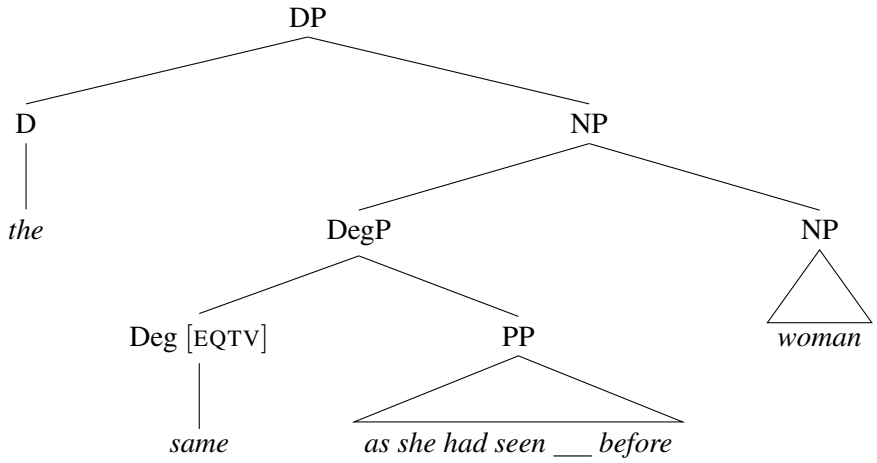
(9) Sarah saw **the same woman**$_i$ [*as she had seen just moments before*].

In this chapter, I show that the alternation between anaphora and modification by an *as*-relative

mirrors the behavior of other degree elements, motivating an account that treats *same* as part of a larger family of degree expressions with particular selectional properties that alternate between selection of an index and selection of an overt standard.

In Chapter 4 I turn to examine the properties of *as*-relatives embedded by *same* in more detail, arguing that they occupy the same structural position as the index does in anaphoric uses. On this account, the structure of the DP in an example such as (9) is therefore as in (10):

(10)



In this chapter I present a syntactic and semantic proposal for *as*-relatives that accounts for a variety of properties. I likewise extend the account to restrictive relative clauses as in (11), which appear minimally different from *as*-relatives:

(11) Sarah saw **the same woman**$_i$ [*that she had seen just moments before*].

Just as in the case of anaphoric DPs, the presence of the modifier *same* is indicative of an underlying structure involving a degree phrase, even in the case of restrictive relatives.

1.4 The view from Washo

The claims I make about the structural sources of anaphora and sameness have testable, cross-linguistic import. In particular, the proposal makes the following cross-linguistic predictions: i)

that anaphoric DPs are structurally-complex in the sense that they host an index, and ii) that there is a close connection between *same*-constructions and other degree expressions in a given language. In Chapter 3, I lend support to both of these claims from Washo, a Native American isolate spoken around Lake Tahoe on the border between California and Nevada in the United States, with data from my own fieldwork on the language.

I argue for the presence of an index in the Washo DP with evidence from the morpheme *-gi/ge* in the language, which I argue to be a definite description in disguise (à la Postal 1967; Elbourne 2005, 2008, 2013) despite its superficially pronominal appearance, exemplified in (12):

(12) *Pronominal use*

gí: pélew ʔ-íʔw-i
3.PRO jackrabbit 3-eat-IND
'He's eating the jackrabbit.'

Evidence for this claim comes from the behavior of demonstratives, internally headed relatives, and other clausal nominalizations in Washo, all of which involve the morpheme *-gi/ge* (which is unstressed and short in the following constructions for phonological reasons), but which require the semantics of a definite article, and not a pronoun, in their interpretation. These constructions are exemplified below:

(13) *Complex demonstrative*

hádi-gi sísu di-gaʔlám-i
DIST-3.PRO bird 1-like-IND
'I like that bird.'

(14) *Internally headed relative*

[mé:hu géwe ʔ-í:gi-yi-š-**ge**] lé:-saʔ l-í:gi-yi
boy coyote 3-see-IND-SR-3.PRO 1-also 1-see-IND
'I also saw the coyote that the boy saw.'

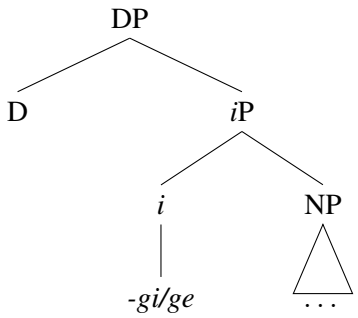
(15) *Clausal nominalization*

[sísu ʔ-šéšim-aŋaw-i-š-**ge**] di-dámal-gaʔlám-i
bird 3-sing.PL-well-IND-SR-3.PRO 1-hear-want-IND

'I like hearing the birds' good singing.'

The structure that I propose for anaphoric DPs in Washo is as follows, in which *gí:/gé:* spells out the index layer in the definite DP, while the definite article itself is null:

(16)



Moving on from structures involving *-gi/ge*, I then turn to the evaluate how the notion of sameness is encoded in Washo. I show that the language lacks a single dedicated word meaning *same*. In doing so, crucially, I argue that the treatment of *same* as a degree head is motivated by this language: Washo has independently been argued to lack both degree semantics and degree morphology (Bochnak 2013, 2015). Given the treatment of *same* as a degree head, I argue that it follows that the language does not lexicalize this word.

Importantly, one aim of this chapter is also to underscore the importance of careful fieldwork in the testing of linguistic theory. While the lack of lexicalization of *same* could be explained in a variety of ways, the crucial aspect of the present proposal is that it *predicts* the lexical gap in Washo based on independent facts about the language.

1.5 The inflection of attributive degree modification

In Chapter 5, the last part of the dissertation, I move away from the structure and interpretation of attributive degree expressions and turn to their inflectional properties. The basis of this investiga-

tion is the inflection of *same* in attributive contexts in German, which is potentially surprising on an analysis in which it is treated as a degree head (which do not generally inflect in the language). As shown in (17), however, *same* bears the same inflection as adjectives do in attributive position:

(17) a. vom selb**-en** Haus
from.the same-INFL house
'from the same house'

b. vom blau**-en** Haus
from.the blue-INFL house
'from the blue house'

To explain this, I propose a post-syntactic account of nominal concord along the lines of Norris (2012, 2014), according to which inflection is realized on Agr nodes, which are inserted post-syntactically. Along the way, I present various problems that Norris's account faces from German – most notably from synthetic (18) and complex (19) degree expressions as shown below:

(18) *Synthetic degree expression*

a. ein schnell-er-**es** Auto
a fast-COMP-**INFL** car
'a faster car'

b. *ein schnell-**es**-er Auto
a fast-**INFL**-COMP car
Intended: 'a faster car'

(19) *Complex degree expression*

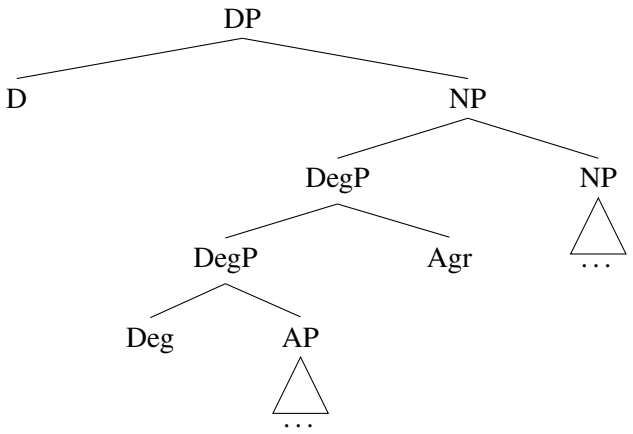
a. ein [braun-er als braun-**es**] Auto
a brown-COMP than brown-**INFL** car

b. *ein [braun-er-**es** als braun(-**es**)] Auto
a brown-COMP**-INFL** than brown-**INFL** car
'a car that's browner than brown.' (Roehrs 2006: 222)

The puzzle that such data pose for Norris's account is that inflection in some case surfaces adjacent

to Deg (e.g., on comparative *-er* in (18)), while in other cases it surface on A (e.g. on *braun* ('brown') in (19)). To account for these data, I propose a revised account according to which Agr is inserted not at individual heads pre-nominally, but at DegP. The structure that this results in is schematized in (20), which achieves a phrasal account of inflection on attributive degree modifiers.

(20)



Crucially, the account also explains why inflection is observed on *same* – despite its status as a degree head – and extends to a variety of other constructions involving analytic degree expressions, pre-nominal raising participles, *tough*-movement, and in particular to puzzling cases of coordination, which display ATB – not phrasal – inflection:

(21) a. ein [alt-**es** und wichtig-**es**] Buch
an old-**INFL** and important-**INFL** book

b. *ein [alt und wichtig-**es**] Buch
an old and important-**INFL** book
'an old and important book'

I argue that the account extends to instances of ATB inflection in coordination if the Agr morpheme may undergo *pointwise attachment* onto both conjuncts postsyntactically, following an analysis of the distribution of the definite suffix in Hebrew proposed by McNabb (2012).

CHAPTER 2

ANAPHORA AND SAMENESS IN THE DP

2.1 Introduction

Definite descriptions often give rise to anaphoric interpretations. For example in (1), the definite description *the woman* refers back to its indefinite antecedent, *a woman*:

(1) Sarah saw *a woman*$_i$ walk past. She then saw **the woman**$_i$ again, just moments later.

In similar contexts, many languages may however also make use of anaphoric *modifiers* within the definite description. One such modifier is *same*, exemplified in (2):

(2) Sarah saw *a woman*$_i$ walk past. She then saw **the same woman**$_i$ again, just moments later.

The central question that I address in this chapter is how the types of anaphora in (1) and (2) are related. While the answer at first glance might seem simple – that *same* is simply an optional modifier in anaphora – I show that this naïve view is not correct. The main proposal of this chapter instead puts forward the claim that the two types of anaphora arise from different underlying structures, building on proposals that indices in the structure of the DP are what generally contribute an anaphoric meaning (Elbourne 2005, 2008; Schwarz 2009; Simonenko 2012; Hanink 2017).

I show that one key piece of evidence that DPs with and without *same* differ in their structure comes from the ability of the former, but not the latter, to introduce an *as-relative*: an embedded phrase or clause introduced by the preposition *as* (Carlson 1977). *As*-relatives are perfectly grammatical when *same* is present (3), but are completely ruled out when it is not (4). Note that in (3), the presence of the *as*-relative notably obviates the need for an antecedent (cf. (2)).

(3) Sarah saw **the same woman** [*as she had just seen moments before*].

(4) *Sarah saw **the woman** [*as she had just seen moments before*].

To present my proposal, I first build on previous claims that anaphora in definite descriptions arises from a dedicated syntax that feeds interpretation (building on i.a. Elbourne 2005, 2008; Schwarz 2009; Simonenko 2014; Hanink 2017). Second, I argue that differences in anaphora with and without *same* result from different underlying structures: while anaphora in definite descriptions arises from the presence of an index phrase in the extended projection of NP, anaphora with *same* arises from an underlying degree syntax in which *same* selects for an anaphoric index of its own. Third, I account for the ability of *same* to introduce an *as*-relative by showing that this follows if *same* is part of a larger family of degree heads, which are known to exhibit the same type of an alternation between an anaphoric interpretation and one that makes use of a clausal or phrasal modifier. The remainder of the chapter addresses cross-linguistic variation in the way that *sameness* – and individual identity – is encoded.

An important aspect of this chapter is to highlight moreover the contribution of work at the interfaces to the study of linguistic theory and to the understanding in particular of the structure of the DP. The overwhelming majority of work on anaphoric DPs in recent years has focused on their interpretation; semantic evidence has been used to justify syntactic claims. In this chapter I approach the problem from a morphosyntactic view and bolster claims with structural evidence, largely with morphological facts concerning the German DP.

2.2 Anaphora in definite descriptions

In this section, I present the intellectual background leading to the present view of anaphora, beginning with proposals for the structure of anaphoric DPs and the nature of indices that stem largely from the work of Elbourne (2005) and its successor in Schwarz (2009).

2.2.1 Background

Much recent work on the interpretation of anaphora concerns itself with the nature of indices in definite descriptions (Elbourne 2005, 2008; Schwarz 2009; Simonenko 2014; Hanink 2017; cf.

Neale 2004). This is largely due to the fact that indices are still little-understood, despite their pervasive use in the literature. For example, in the most non-technical sense, indices are often used simply to indicate coreference between two discourse referents, as in (5):

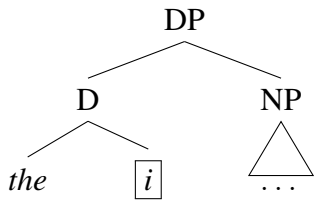
(5) Sarah saw *a woman*$_i$ walk past. She then saw **her**$_i$ again, just moments later.

In (5), the subscripted indices are meant to indicate that both the pronoun 'her' and the indefinite antecedent 'a woman' refer to the same individual: they are *coreferent*. Complicating this use of indices however, is the fact that we also see anaphora in more complex referential expressions, such as definite descriptions:

(6) Sarah saw *a woman*$_i$ walk past. She then saw **the woman**$_i$ again, just moments later.

The question that arises from examples such as (6) is how the notion of the index should be conceived of in relation to definite descriptions, which are structurally more articulated than pronouns. Recent proposals have aimed to answer this question through the claim that anaphoric DPs in fact host an index in their *structure*, that is, that indices are not simply notational devices, but are themselves syntactic objects (i.a. Elbourne 2005, 2008; Schwarz 2009; Simonenko 2014).[1] For example, Elbourne (2005) proposes the following structure for the English DP, in which D selects for an index in addition to its usual nominal complement:

(7)

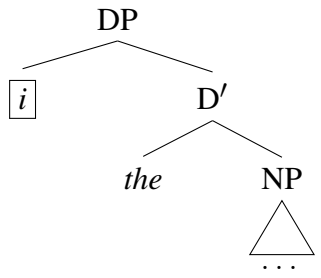


Schwarz (2009) then builds on this work by proposing the following structure for anaphoric

1. Elbourne (2005) puts forward the view that pronouns are in fact definite descriptions in disguise, making a structural parallel between the locus of indices in pronominal structure and in definite descriptions. For more on the structure of pronouns and the way indices fit therein, see i.a. Déchaine & Wiltschko (2002).

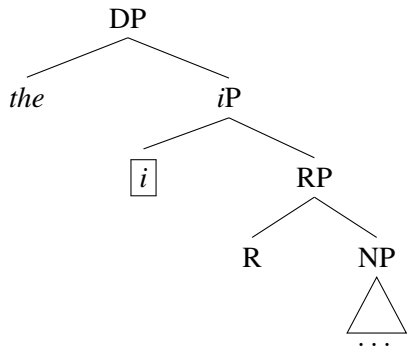
DPs in German, in which the index is encoded as a specifier of D:

(8)



Simonenko (2014) offers yet a further take on the structure of anaphoric DPs, making use of Elbourne's (2008) R variable from his work on demonstratives, the purpose of which is to relate the property-meaning of the noun with some other contextually salient property:

(9)



The common thread among all of these implementations is the treatment of the index as a syntactic object, realized in the structure of anaphoric definites. On this view, the ability of definites to give rise to anaphoric meanings is then explained by the fact that the index is interpreted in the familiar way – with the help of an assignment function – on a par with a pronoun:[2]

(10) $[\![i]\!]^g$: g(i) Traces and Pronouns Rule (Heim & Kratzer 1998)

Because this assignmnent-sensitive meaning is encoded within the DP, the individual that the definite description comes to denote is defined as one identical to some antecedent, whose referent is

2. Elbourne (2005) also proposes that the index could be property-denoting. I return to this idea in the presentation of my own analysis.

picked out by the index. To give just one example of how this works, I give the definedness conditions for Elbourne's structure in (11) (adopting the particular formulation from Arregi (2000)):

(11) a. $[_{\text{DP}}[\text{ the } i\ ]\ [_{\text{NP}}\ \text{N}\ ]\ ]$

b. For any $[\text{the } i]$ and assignment g, $[\![\text{the } i]\!]^g$ =

λf: f $\in \text{D}_{\langle e,t\rangle}$ & there is exactly one x s.t. f(x) = 1 & x = g(i).

the unique x such that x = g(i) & f(x) = 1.

The presence of the index restricts the interpretation of the definite to an individual coreferent with some antecedent, in effect syntactizing dynamic accounts (i.a. Kamp 1981; Heim 1982) and further diverging from accounts of anaphoricity relying on contextual domain restriction encoded by, e.g., a C variable (i.a. Heim 1991; Neale 1990; Giannakidou 2004; Kang 2015) or situation pronouns (Wolter 2006).

2.2.2 Two forms of the definite article in German

Schwarz (2009) builds on Elbourne's (2005) line of work and advances the view that anaphoric DPs are structurally complex by showing that they may behave differently from their non-anaphoric counterparts. To do so, Schwarz argues that there are two distinct forms of the definite article in Standard German: one which may contract with a preceding preposition, and one which may not (see also Hartmann 1978, 1980; Haberland 1985; Cieschinger 2006).[3]

A crucial component of Schwarz's work is that the two morphologically distinct forms of the article mark a semantic distinction as well. First, the so-called *weak*, contracted form of the definite article is used in contexts where the definite refers to a unique individual in a given context, as in

3. Many dialects of German likewise exhibit this sensitivity, which in many cases results in separate paradigms for the anaphoric and non-anaphoric forms. Schwarz (2009) cites the following literature: Heinrichs (1954) and Hartmann (1967) on Rhineland dialects (see also Hartmann (1967)); Hartmann (1982) on the Mönchen-Gladbach dialect; Himmelmann (1997) on the Cologne dialect; Scheutz (1988) and Schwager (2007) on Bavarian; and Ebert (1971a,b) on the Frisian dialect of Fering. See also Arkoh & Matthewson 2013 for related claims about Akan and Jenks (2015) for Mandarin.

(12), in which the use of the definite picks out the unique individual mayor in a given town.[4]

(12) *Unique 'weak' form*

Der Empfang wurde {**vom/#von dem**} Bürgermeister eröffnet.
the reception was by.the/by the mayor opened

'The reception was opened by the mayor.' Schwarz (2009: 40)

The so-called *strong*, non-contracted form of the definite article on the other hand is used when the use of the definite is not only unique, but also *anaphoric*, as in (13), in which the definite description follows an antecedent:

(13) *Anaphoric 'strong' form*

Fritz wohnt seit Jahren in einem groβen Haus. Er schwärmt {#**vom/von dem**}
Fritz lives since years in a big house. He raves from.the/from the

Haus.
house

'Fritz has lived in a big house for years. He raves **about the house**.'

The morphological difference between (12) and (13) is reflected in the contraction of the preposition and determiner in the former, but not the latter. This distinction leads to what I call Schwarz's generalization, which describes the distribution of the two forms of the article in German:

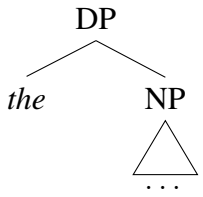
(14) **Schwarz's generalization:**

Anaphoric uses of the definite article in Standard German require the strong form.

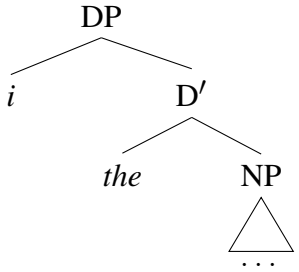
While Schwarz (2009) focuses largely on the interpretation of unique definites, he gives an account of the strong form of the article by positing an index in the structure of anaphoric definites that is lacking in non-anaphoric DPs, as shown in the contrast between (15) and (16):

4. Schwarz (2009) derives domain restriction through a situation semantics building on Kratzer (1989a), but I do not include those details here.

(15) *Unique DP*



(16) *Anaphoric DP*



As the structure of the DP in (16) includes an extra argument, Schwarz's analysis requires two meanings for the definite article to accommodate the index in the anaphoric DP. He therefore proposes the following distinction between the meanings of the weak and strong forms, in which the definite article takes two arguments, rather than just one:[5]

(17) a. $[\![\textit{the}_{weak}]\!]$: $\lambda \mathrm{P}_{\langle e,t\rangle} \iota \mathrm{x}_e[\mathrm{P(x)}]$

b. $[\![\textit{the}_{strong}]\!]$: $\lambda \mathrm{P}_{\langle e,t\rangle} \lambda \mathrm{y}_e \iota \mathrm{x}_e[\mathrm{P(x)} \,\&\, \mathrm{x{=}y}]$

To explain contraction, Schwarz suggests that the presence of the index above D blocks contraction with a preceding preposition in the case of the anaphoric form. Importantly however, the semantic facts that are the focus of Schwarz's proposal require an explicit morphosyntactic account to explain the correlation between contraction and anaphoricity. I now turn to my own account of the facts in the next section that explains contraction, and which has the benefit of preserving one meaning for the definite article across both anaphoric and non-anaphoric uses.

2.2.3 Motivating contraction in the syntax

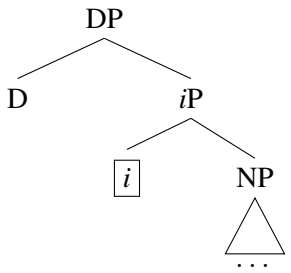
To account for the morphological behavior of the strong and weak forms of the definite article in German, I follow here proposals that I made previously in Hanink (2017). In this work, I essentially adopt Schwarz's basic proposal outlined above, with some minor modifications. First, I adopt the same standard structure and interpretation of non-anaphoric DPs as Schwarz does, which I do not

5. I have left out the presuppositional content from these denotations.

discuss any further.

Turning to the strong form, the structure I adopt builds on the work cited from Elbourne (2005), Schwarz (2009), and Simonenko (2014). This structure is particularly similar to that proposed by Simonenko (2014), but does not make use of an R variable: this places the index between the DP and NP layers in the syntax, treating it essentially as a nominal modifier. As mentioned above, one benefit of this structure is that it requires just one denotation for the definite article, while Schwarz's requires different meanings for the strong and weak forms due to the proposal that the index is encoded as a specifier of D. Further motivation for the particular syntax in (18) is given in Chapter 3 during the discussion of Washo.

(18)

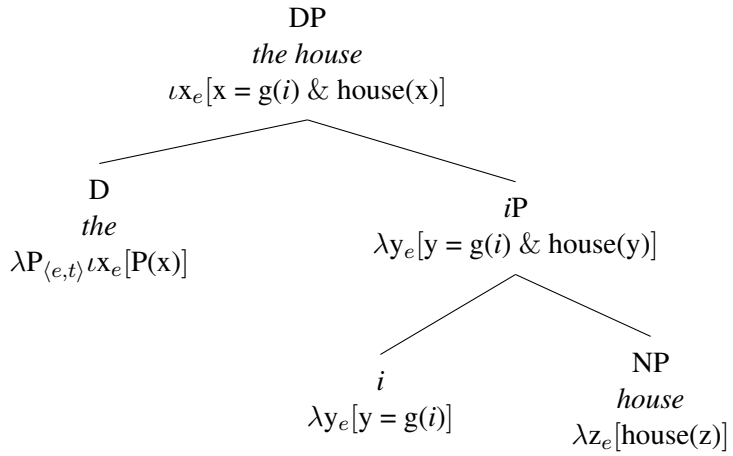


From a semantic perspective, this structure gives rise to the interpretation in (19). The property-denoting index undergoes Predicate Modification with the property denoted by the NP 'house.'[6] This complex property then denotes the set of individuals that are both houses and equivalent to some unbound variable. Because the *i*P is property-denoting, it composes with the Strawsonian definite article (Strawson 1950) just as the NP would in a non-anaphoric DP. The result is then the unique individual house that is identical to some unbound variable, which can therefore be equated with an antecedent to result in an anaphoric meaning.[7]

6. Elbourne (2005) notes that there are two ways to treat indices: either by giving them a property type along these lines or by treating them as an individual pronoun and adjusting the way that the Traces and Pronouns rule of Heim & Kratzer (1998) is formulated.

7. I note that these denotations are static and require a dynamic semantics to explain how the referent of the free variable is picked out by the assignment function.

(19)



Note that while indices are generally considered to be individuals and therefore of type e, we can arrive at a property meaning by applying the IDENT type-shift of Partee (1987), which shifts an individual of type e to a property of type ⟨e,t⟩ (Elbourne 2005; Simonenko 2014):

(20) $[\![i]\!]^g$: $\lambda x_e[x = g(i)]$

The above derivation shows that the structure and interpretation work together to derive the anaphoric meaning of the definite description. Crucially however, this structure can also explain the morphological facts correlated with the semantic contrast between the strong and weak forms.

In the case of the weak form, I continue to follow my proposal in Hanink (2017) and treat preposition-determiner contraction as the result of *Lowering* (Embick & Noyer 2001) within the post-syntactic component of the grammar, adopting the framework of Distributed Morphology (Halle & Marantz 1993). Lowering is a downward movement operation that targets sequences of heads in a local domain, and is schematized in (21) (Embick & Noyer (2001: 561)).

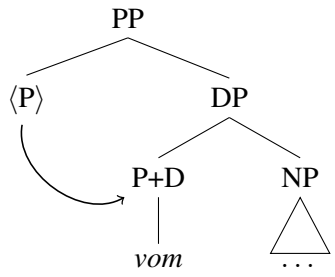
(21) **Lowering**

$[_{XP}\ X^0 \ldots [_{YP} \ldots Y^0 \ldots]] \rightarrow [_{XP} \ldots [_{YP} \ldots Y^0 + X^0 \ldots]]$

Essentially, preposition-determiner contraction occurs when a preposition lowers to an adjacent D head in its complement position, as shown in (22). This will then obtain whenever the two heads

are adjacent to one another, but not when anything else intervenes.

(22) *P-to-D Lowering*



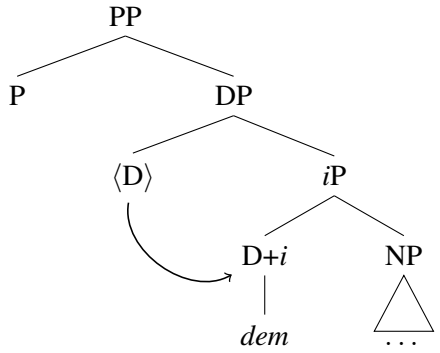
Following this step of lowering, the preposition and determiner undergo Fusion (i.a. Baker 1988; Bonet 1991; Halle & Marantz 1993). The crucial result of this operation is that, while the newly formed complex node contains the features of both the preposition and determiner, it allows just one vocabulary entry for the head, as shown in (23) (schematic adapted from Trommer 2012). Fusion therefore allows for the preposition and determiner to be spelled out as a single exponent.

(23) *Fusion of P and D:*

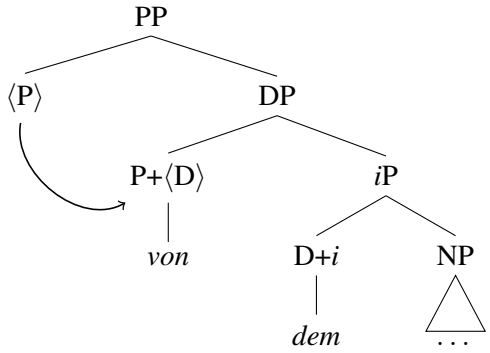
$$\left[\text{PFORM: von}\right]\left[\text{D: }\phi\text{, CASE}\right] \rightarrow \left[\left[\text{PFORM: von}\right]\left[\text{D: }\phi\text{, CASE}\right]\right]$$

In the case of the strong form on the other hand, I argued in Hanink (2017) that the presence of *i*P results in an extra step of lowering that blocks the environment for preposition-determiner contraction. Before P lowers to D, D lowers to the index it selects for, rendering the result of P-to-D vacuous and thereby blocking contraction:

(24) *D-to-i Lowering*



(25) *P-to-D Lowering*



Again in this case, fusion occurs between the lowered D head and the index, as shown in (26). The features on the determiner are again its ϕ and case features; the feature borne by the index is the value of the index it picks out (Rezac 2004; Kennedy 2014; Hanink & Grove 2017).[8]

(26) *Fusion of D and i:*

$$\left[\text{D: } \phi, \textsc{case}\right]\left[i\text{: } \textsc{index}\text{: } n\right] \rightarrow \left[\begin{array}{l}\left[\text{D: } \phi, \textsc{case}, \textsc{gender}\right] \\ \left[i\text{: } \textsc{index}\text{: } n\right]\end{array}\right]$$

In sum, the contraction effects reveal that interpretive differences in anaphoric and non-anaphoric definites have a morphological reflex: they differ syntactically in whether an index is present. This structural difference then leads to morphological differences observable on the surface.

This section has provided the first pieces of evidence for the presence of indices in syntactic structure, building largely on Schwarz (2009) and Hanink (2017). I note that in Hanink (2017), I proposed that *same* is in fact an allomorph of the index in the strong form, explaining its use in anaphora. In the next section however, I offer a proposal in which *same* is treated as a degree head instead, which captures a variety of generalizations about this modifier and which is an improvement of my previous account.

8. I do not give the particular rules for vocabulary insertion here, though see Sauerland (1996) for a complete system of determiner endings in German.

2.3 'Same' and degree syntax

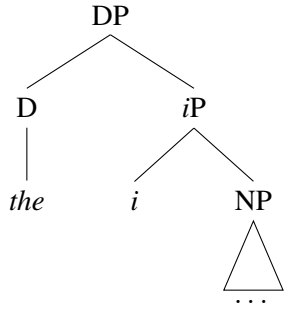
The previous sections in this chapter have shown that the syntax of anaphora explains why the two forms of the definite article in Standard German have different morphology: the ability to host anaphora arises from an additional structural layer – *i*P – in the syntax of the DP.

I now turn to one core aspect of anaphora that remains unexplored in the domain of anaphoric DPs: how the presence of this extra structure interacts with other nominal modifiers. To do so, I examine the interaction between indices and the anaphoric modifier *same*. While various literature has focused – or at least touched on – the anaphoric nature of modifiers such as *same* and *different* (i.a. Dowty 1985; Carlson 1987; Moltmann 1992; Beck 2000; Dotlačil 2010; Brasoveanu 2011; Bumford & Barker 2013; Charnavel 2015; Hardt & Mikkelsen 2015), this work focuses largely on their interpretation, and not on the syntactic properties that contribute to anaphoric readings.[9] Given the proposal that anaphoric DPs contain an index, however, the structural relationship between anaphoric modifiers and this index is one that must be accounted for.

2.3.1 Preview of the proposal

So far I have argued, building on previous lines of inquiry, that DPs may house an index in their structure in order to give rise to an anaphoric interpretation:

(27) *Structure of an anaphoric DP*:



Anaphoric definites are however also seen in cases where the modifier *same* is also present, as

9. See also Barker (2007) and Matushansky (2010b) for work on 'internal' *same*.

in the example below, repeated from (2):[10]

(28) Sarah saw *a woman*$_i$ walk past. She then saw **the same woman**$_i$ again, just moments later.

There are two potential hypotheses to explain the relationship between anaphoric DPs with and without *same*. The null hypothesis is that *same* is simply compatible with anaphora for semantic reasons, and is therefore optionally included.

(29) **Null Hypothesis**:
Same is an optional modifier in an otherwise unchanged DP structure.

The alternative hypothesis is that *same* is contributing something other than what might be expected of an optional modifier. Given the claim that anaphora in general arises from a dedicated syntactic source, this hypothesis contends that anaphora with *same* arises from a structure different from that utilized in anaphora without *same*.

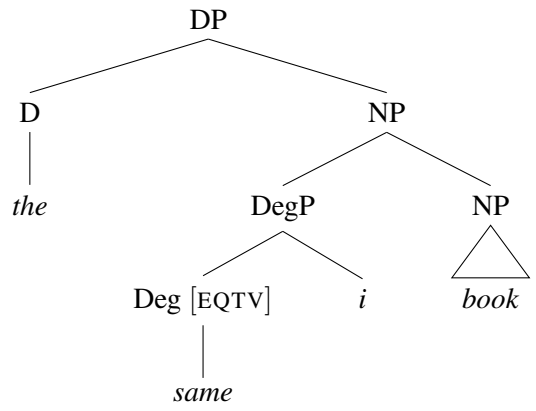
(30) **Alternative Hypothesis**:
Anaphora with *same* is indicative of a changed DP structure.

I will be pursuing the alternative hypothesis here. In particular, I propose that *same* is in fact part of an optional modifier, but one that heads a degree phrase and not an adjectival one. Just as in the case of anaphora without *same*, an index is still present in the structure when *same* occurs. In this case, however, the index is an argument of *same* and not of the definite article directly.

The basic degree syntax I adopt is shown in (31), which I explain in more detail in the following section.

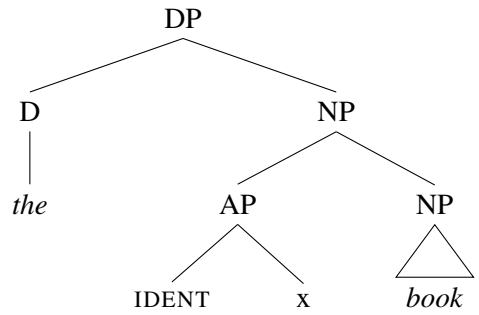
10. I continue to make use of subscripted indices for expository purposes.

(31) *Structure of an anaphoric DP with 'same:'*



I note here that previous work has suggested an account along these lines, cast in slightly different terms. For example, Matushansky (2010b) proposes the following syntax for anaphoric *same*, in which *same* is the realization of Partee's (1987) IDENT type-shift:

(32)



The IDENT type-shift shifts an expression of type e to one of type $\langle$e, t$\rangle$, with the result in (33):

(33) [[IDENT]]: $\lambda z_e \lambda y_e [y = z]$

This account is very similar to the one proposed here, but differs crucially in the category of both *same* and, accordingly, the phrase it projects. Relatedly, Charnavel (2015) proposes that *same* is a relational adjective that obtains its anaphoric meaning by means of an elided, underspecified DP that is interpreted pragmatically, but she does not give this aspect of her analysis in explicit terms.

A crucial part of this chapter is to emphasize however the treatment of *same* not as an adjective, but as a degree head. This proposal explains the types of complements it takes, and will become

especially relevant in the discussion of Washo in the next chapter.

2.3.2 The anaphora/overt modification alternation

In the introduction to this section, we saw that definite descriptions with and without *same* differ in at least one way: the former, but not the latter, may license an *as*-relative. I show this again in (34) and (35), repeated from (3) and (4):

(34) You saw **the same woman** [*as I did*] immediately order a coffee.

(35) *You saw **the woman** [*as I did*] immediately order a coffee.

In this section, I argue that this distinction provides a crucial clue to the status of *same* as a degree element, by showing that the ability to introduce either an anaphoric reading or a clausal modifier is a property of degree expressions more generally.

Importantly moreover, note that the presence of the *as*-relative obviates the need for *same* to refer back to an antecedent. That is, on the hand we see anaphoric uses of *same* such as those in (36), while on the other hand we see a use of *same* that co-occurs instead with an *as*-relative (37). The two convey similar meanings; the difference is that (36) makes use of two independent clauses while (37) involves subordination.

(36) *Anaphora*

Mary finished reading *a long book* yesterday. Now Johanna is reading **the same book**.

(37) *As-relative*

Johanna is reading **the same book** [*as Mary read*].

This type of alternation – which I henceforth refer to as the *anaphora/overt modfication alternation*, is in fact common to a larger family of expressions: degree expressions. For example, it is found in the equation of *kinds* introduced by *such* (Carlson 1977; Anderson & Morzycki 2015; Landman 2006):

(38) *Such: kind equatives*

a. John's dog *barks whenever he leaves home*$_k$. I too have **such**$_k$ **a dog**.

b. John has **such a dog** [*as I have described*].

It is also found in the equation of degree equatives introduced by *as* (Landman 2006; Anderson & Morzycki 2015):

(39) *As: degree equatives*

a. Fresh vegetables are *good for cooking*$_d$, but frozen vegetables are just **as good**$_d$.

b. Frozen vegetables are just **as good** for cooking [*as fresh vegetables are*].

Outside the domain of equatives, but still within the larger family of degree expressions, the anaphora/overt modification alternation is also seen in the domain of comparatives, as discussed for example by Alrenga et al. (2012).[11] These authors discuss examples such as (40), in which the comparative can carry an anaphoric meaning:

(40) Apples are an *interesting*$_d$ fruit, but pomegranates are **more interesting**$_d$.

The anaphoric use in (40) crucially makes reference to the degree to which apples are interesting, which is introduced in the previous clause. Comparatives however also have a use that does not require any antecedent, namely when a *than*-clause expressing the standard of equation is present:

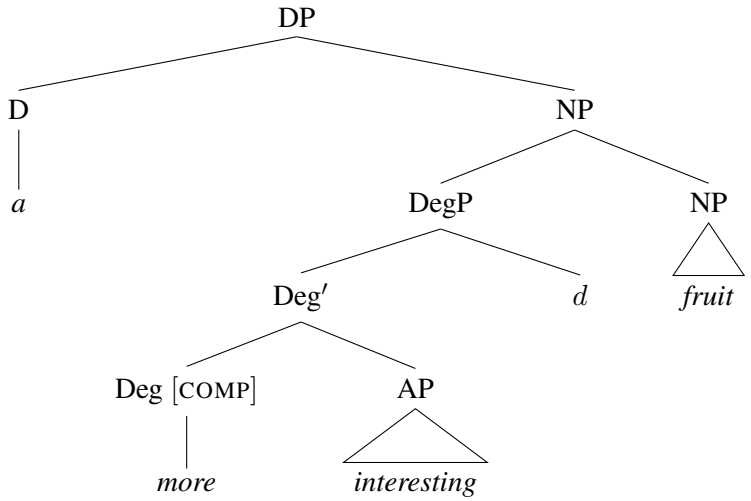
(41) Pomegranates are a **more interesting** fruit [*than apples are*].

To account for this alternation, Alrenga et al. (2012) propose the structure in (42) for an anaphoric example such as (40), in which comparative *more* selects for two arguments: an adjectival complement, and an implicit degree argument in its specifier. Crucially, the value of this implicit argument must then be resolved in some way, namely with that of the degree introduced in the antecedent,

11. Notably, this alternation is not available to superlatives.

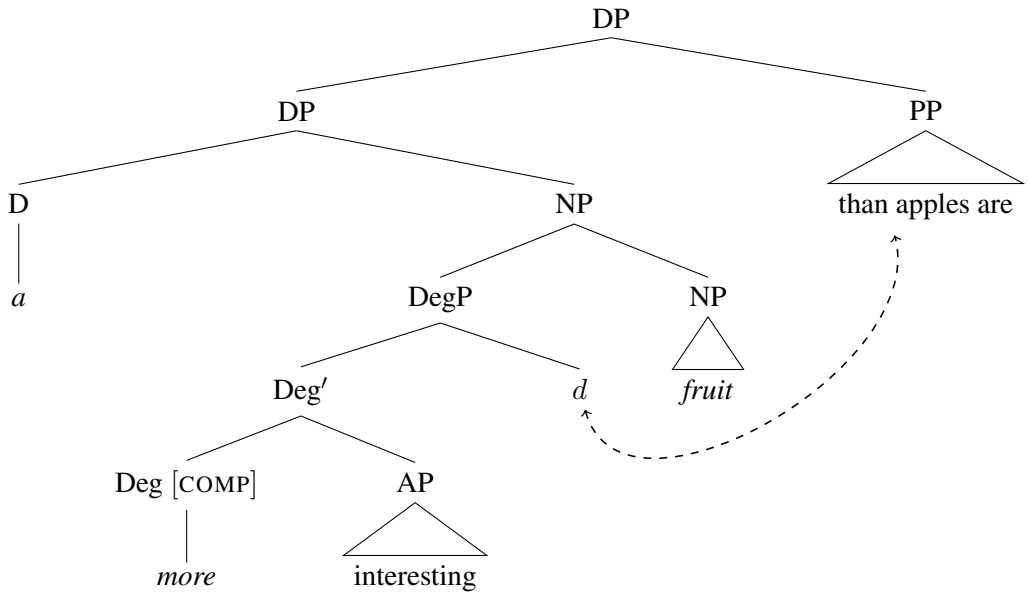
resulting in an anaphoric interpretation.

(42) *Anaphora*



To account for examples in which a clausal modifier is present, Alrenga et al. propose the slightly modified structure in (43), in which the standard of comparison is related to the implicit argument indirectly (extraposition is not assumed). In this approach to the structure of degree phrases, the DegP is an adjunct to NP (Abney 1987; Svenonius 1992; Kennedy & Merchant 2000).

(43) *Overt standard of comparison*



In (43), the comparative head *more* again selects for two arguments: an adjectival complement and the implicit degree argument as its specifier, which is now related to the overt standard of equation expressed by the *than*-clause.

Note moreover that there are different ways to relate the position of the standard on the surface to its underlying role as an argument of the comparative degree head. While Alrenga et al. (2012) propose that the *than*-clause is base-generated outside the degree phrase (see also Bhatt & Pancheva (2004)) and related to it by agreement, accounts invoking base generation of the PP as the complement of Deg and subsequent extraposition (Guéron & May 1984) likewise derive the correct word order. The exact implementation is not important for the point I make here. Crucial to this type of analysis is instead that the *than*-clause and degree argument play the same role: both provide the standard of comparison.

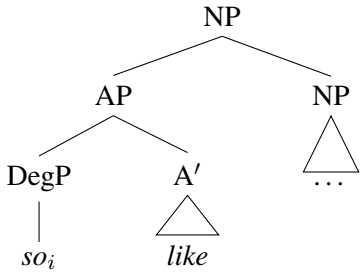
In the analysis of *same* to follow, I build largely on the type of analysis Alrenga et al. (2012) put forward for comparatives. Aside from comparatives, however, the analysis is also informed by previous work on the degree element *such* (Jespersen 1927; Bolinger 1972; Bresnan 1973; Carlson 1977; Siegel 1994; Wood 2002; Landman 2006; Anderson & Morzycki 2015). As shown in (44), *such* likewise alternates between an anaphoric use (44a) and a clausally-modified use with an *as*-relative (Carlson 1977; Landman 2006; Anderson & Morzycki 2015), which I henceforth refer to as a *kind equative*:

(44) a. Johanna has a *very playful dog*. Mary too has **such**$_k$ a dog.

b. Mary has **such** a dog [*as Johanna does*].

In (44a), the observed anaphora is to the 'playful-dog' kind. To account for this, Landman (2006) argues, building on Carlson (1977), that an anaphoric meaning is built into the denotation of *such*. As shown in (45), she treats *such* as the morphological combination of *so* + *like* (cf. Siegel (1994), who treats *such* as adjectival in category):

(45)



The motivation for this structure is to assimilate the traditional DegP configuration in which a degree phrase occupies the specifier of an adjective (Chomsky 1965; Selkirk 1970; Bresnan 1973; Heim 2000; termed the 'classical view' by Bhatt & Pancheva 2004).

In Landman's analysis, *so* denotes a variable over kinds/objects (46a), while *like* maps a kind to the property of objects that instantiate that kind (46b). Together, these meanings result in a property of individuals that instantiate the kind picked out by *such*:[12]

(46) a. $[\![\text{so}_i]\!]^g$: g(*i*)

b. [[like]]: $\lambda \text{k}_e[\lambda \text{x}_e[\text{x} \leq \text{k}]]$

c. $[\![\text{such}]\!]^g$: $\lambda \text{x}_e[\text{x} \leq \text{g}(i)]$

According to Landman's analysis moreover, the *so* part of *such* is then ambiguous between a deictic, referential interpretation that is anaphoric to a kind, and a quantificational interpretation that denotes a relation between sets of kinds, explaining the ability of *such* to compose with an *as*-relative. In the case of as-relatives, the embedded clause undergoes QR as a generalized quantifier relating individuals to kinds (I return to this in §4.2.2). This analysis resembles the proposal for comparatives put forth by Alrenga et al. (2012) in that there is an alternation between an anaphoric use and a clausal modifier, but differs in that the variable giving rise to anaphora originates in a different structural position from the *as*-relative.

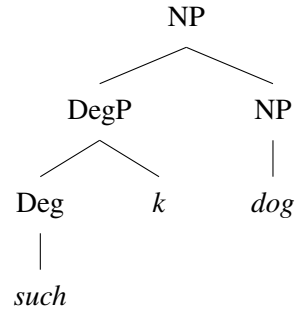
Anderson & Morzycki (2015) present an analysis of *such*, however, in which the kind variable and the *as*-relative do occupy the same structural position. Like Landman (2006), Anderson &

12. cf. Siegel (1994), for whom *such* is anaphoric to a property.

Morzycki treat *such* as anaphoric to a kind, as in (47), but in their analysis the anaphoric variable is introduced as the complement of Deg, rather than being encoded in the meaning of *so* directly:

(47) a. . . . Mary too has **such**$_k$ a dog.

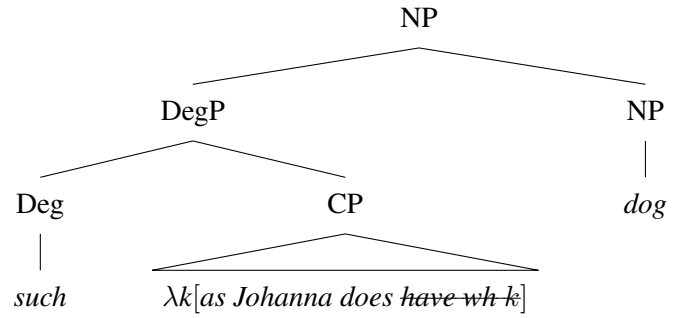
b.



In the case of clausal modification, Anderson & Morzycki (2015) propose something similar to what we saw in Alrenga et al.'s (2012) treatment of comparatives: the *as*-relative occupies the very same structural position as the kind variable does in the anaphoric use:

(48) a. . . . **such** a dog [*as Johanna does*].

b.



The meaning that Anderson & Morzycki (2015) propose for *such* is given in (49), where the *o* variable represents the ability of both individuals and objects to saturate this argument (for reasons not relevant here):

(49) [[*such*]]: $\lambda k_e \lambda o_e [^{\cup} k(o)]$

In the case of anaphora, the kind picked out by the kind variable will determine what the object

it applies to instantiates. In the case of an *as*-relative, Anderson & Morzycki argue that the CP undergoes a type-shift and QRs, leaving behind a kind-denoting variable. I return to further discussion of their treatment of *as*-relatives in §4.2.2. Crucially however, in Anderson & Morzycki's (2015) analysis, as in the case of comparatives, the anaphoric kind variable and the *as*-relative play the same role: they identify the kind that the referent of the DP is equal to.

One of the main take aways from these proposals is the desirability of an account of degree elements to relate anaphoric uses to uses involving overt standards of comparison/equation – the anaphora/overt modifcation alternation – for two reasons. First, the implicit argument in cases of anaphora plays the same role as the overt standard otherwise does: it introduces the object being compared to or equated with. Second, this alternation is observed in a wide variety of degree expressions, which is expected if it is tied to the selectional properties of degree heads. In the next section, I present an analysis of *same* that takes these considerations into account.

2.3.3 'Same' as a degree head

In this section, I build on work on the observed alternation between anaphora and clausal modification seen in comparatives and in kind equatives by proposing that the alternating behavior of *same* is likewise explained if *same* is syntactically a degree head. This means that, like comparatives, *same* either introduces an implicit individual argument that is anaphoric to some antecedent, or introduces an overt *standard of equation*.

The idea that *same* is a degree head is not new, but goes back at least to Heim's (1985) work on comparatives in which she notes the similarity between degree equatives and equatives introduced by *same*. In more recent work, Alrenga (2006, 2007) builds on Heim's suggestion by showing that *same* in fact has a true degree use, which he diagnoses by its ability to occur with gradable modifiers. As exemplified in (50), the same set of gradable modifiers that may occur in degree equatives (50a) may also occur in equatives introduced by *same* (50b):

(50) a. *Degree equative*

Mary is { *almost, nearly, just about, not quite, roughly* } **as tall** as Johanna.

b. *Same equative*

Frozen fish is { *almost, nearly, just about, not quite, roughly* } **the same** as fresh fish.

Alrenga (2007) argues that *same* is compatible with gradable modifiers because it *also* makes reference to degrees, namely, degrees on a scale of *similarity*. He also points out however that in some cases, gradability is not possible. An example of one such instance is given in (51):

(51) I saw #{ *almost, nearly, just about, not quite, roughly* } **the same woman** as you did.

The difference between an example such as (50b) and (51) is that (51) equates *individuals*, rather than *degrees of similarity between individuals*. It is therefore infelicitous unless a meaning is accommodated in which the woman that you saw is similar to some other woman in a relevant way (e.g., perhaps we're both scanning a crowd and saw two women wearing the same type of outfit). Because of this, Alrenga (2007) proposes that *same* is in fact polysemous between a gradable and non-gradable use.

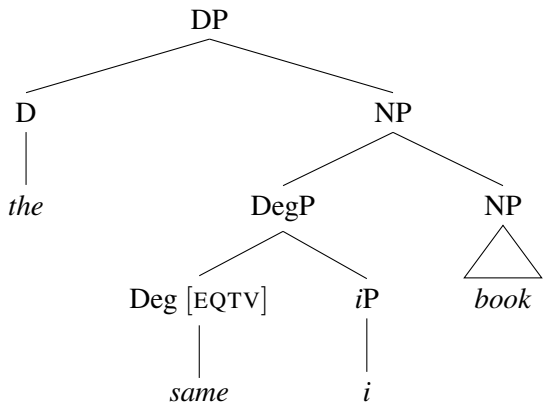
I build on Alrenga's claim that *same* is polysemous, and take it one step further to argue that the degree phrase headed by *same* can make reference either to degrees of similarity or to sheer identity. This leads to a single underlying syntax across both uses; even non-gradable *same* makes use of a 'degree frame' to equate individuals rather than degrees. This analysis therefore suggests that degree syntax has been co-opted in more general cases that don't make reference to degrees, most likely because this particular syntactic frame comes in handy when comparing or equating two objects. The equated individual can either be supplied by an antecedent, or can be established via an overt standard of equation, just as in true degree uses.

To make the proposal more explicit: in anaphora with *same*, the equative degree head selects for a silent individual argument: the index. In the case of *as*-relatives, an overt standard of equation is selected for instead (I return to this in §3.3). I begin with the anaphoric use of *same* as in (52):

(52) Mary finished reading *a long book*$_i$ yesterday. Now Johanna is reading **the same book**$_i$.

On the proposal that *same* heads a degree phrase that selects for an index in anaphora, an example such as (52) then has the structure in (53), in which I continue to follow the assumption that DegP is left-adjoined to NP in the case of attributive degree modifiers (Abney 1987; Corver 1990; Kennedy 1999; Svenonius 1992; Kennedy & Merchant 2000). Just as in anaphora, the index heads its own index phrase, a necessary syntactic assumption left out in previous work on indices.

(53)



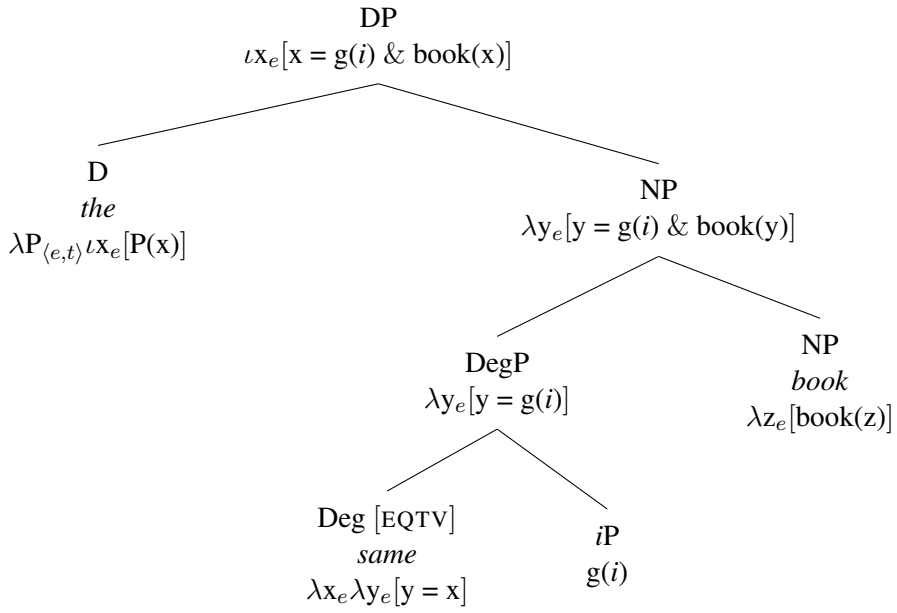
Further, the semantics that I propose for *same* is given in (54), following Alrenga (2009); Oxford (2010); and Matushansky (2010b). This meaning is simple: it places two individuals in a relationship of identity with one another.[13]

(54) [[*same*]]: $\lambda z_e \lambda y_e [y = z]$

Unlike in the case of anaphora without *same*, this type of meaning does not requires the type of the index to be shifted to its property meaning: it is interpreted as type e, and as such can saturate the first argument in the meaning of *same*. Given these ingredients, the derivation for the anaphoric use of *same* is as in (55):

13. This meaning of *same* is only applicable to the non-gradable use, which does not make reference to degrees. See Alrenga (2007) for a different possible meaning for *same*.

(55)



In (55), the selected implicit argument first saturates the first argument of [[*same*]]. Then, the properties denoted by DegP and NP undergo Predicate Modification. After ι-binding by the definite article, the result is – identically to what we saw above in anaphora without *same* – a DP containing an unbound variable that establishes an anaphoric connection through the mapping of the implicit argument to an antecedent by the assignment function.[14]

The meaning of the entire DegP is essentially the same as that of the index on its IDENT-shifted meaning, but we arrive there in two steps. Of course anaphora with and without *same* do in fact have slightly different meanings, and differ with respect to contrast and/or emphasis. It might therefore make sense to appeal to a notion of competition between the two, e.g. through an appeal to *Maximize Presupposition* (Heim 1991) While this meaning of *same* is also likely oversimplified given recent claims about the contribution of this modifier in deep anaphora (Hardt et al. 2012; Hardt & Mikkelsen 2015), it will suffice for the purposes at hand.[15]

14. This type of variable is necessarily free when used in cross-sentential anaphoric contexts. See Giannakidou (1998) for more on 'flavors' of variables, namely dependent and non-dependent variables, which may not be bound.

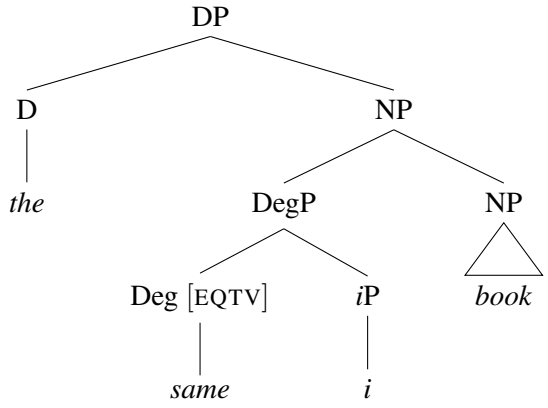
15. I note as well that individual-equating *same* can equate *types* in addition to *tokens*. See Alrenga (2009) for arguments that types may be picked out by the assignment function in the same way as token individuals.

2.3.4 Obviating the anaphoricity requirement

I now return to explain why there is no anaphoric requirement for *same* when an *as*-relative is present. Just as in comparatives, we see both an anaphoric use of *same* and a non-anaphoric use. I argue that this is because the position of the implicit argument also hosts the standard of equation in the case of *same*. The structures for both types of uses are shown in (56) and (57), respectively:

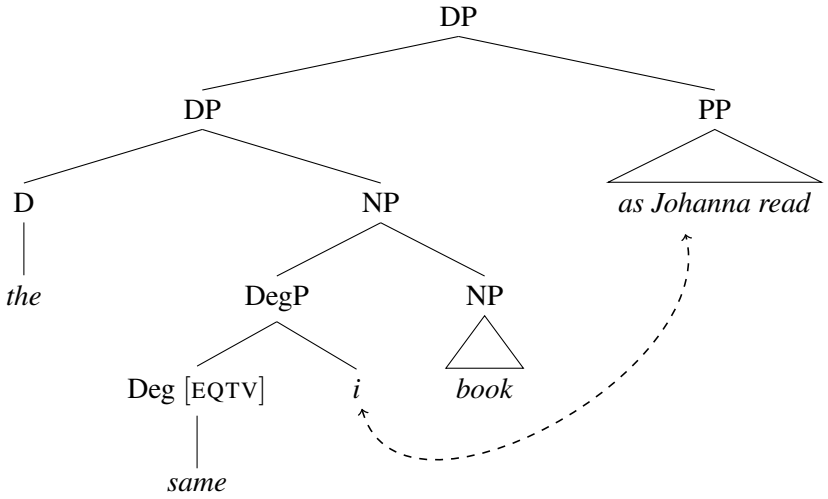
(56) *Anaphora*

Johanna finished reading *a long book*$_i$ yesterday. Now Mary is reading **the same book**$_i$.



(57) *As-relative*

Mary is reading **the same book** [*as Johanna read*].

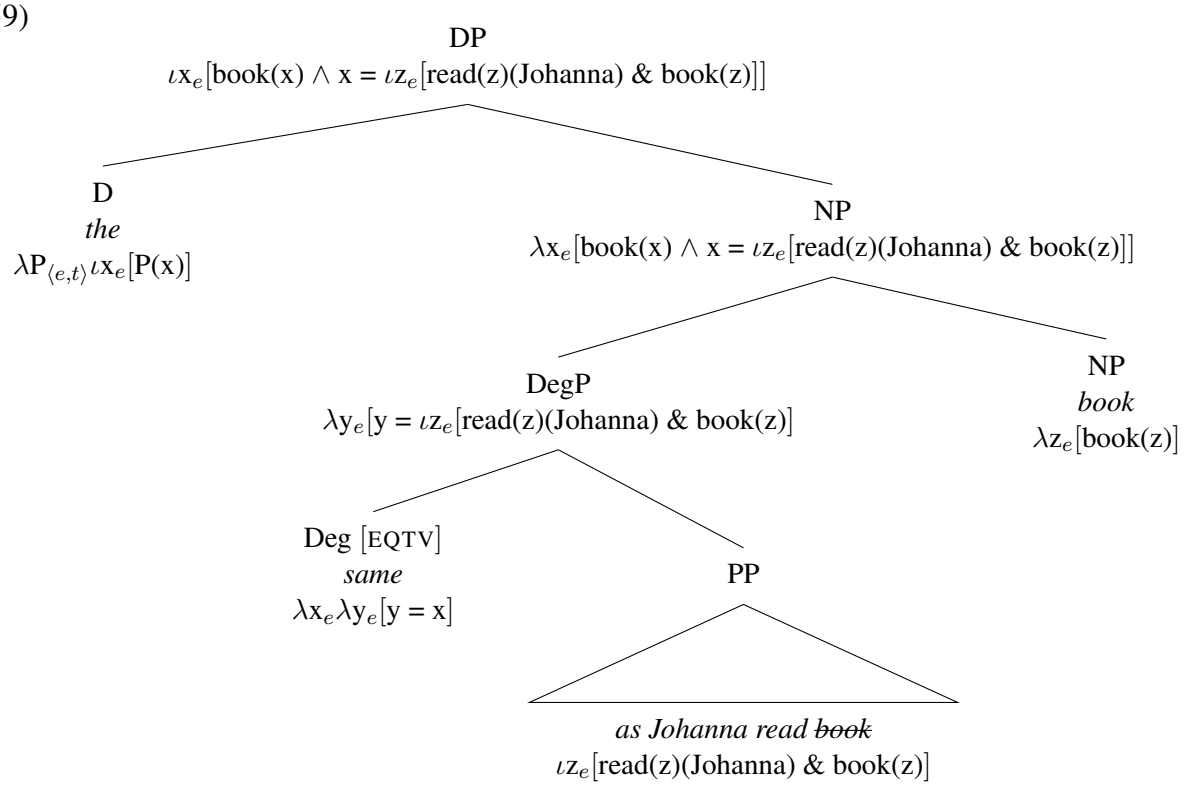


Just as in comparatives, the implicit argument and the *as*-relative perform the same role in *same*-equatives: both introduce the equated argument. Crucially, from a semantic perspective, composition is possible because the *as*-relative is of the same type as the index on the anaphoric reading: type e. To arrive at this meaning, I build on Rett (2013) in the assumption that the *as*-relative is property denoting, but further suggest that it undergoes the IOTA type shift (Partee 1987), resulting in (58) (see also Alrenga 2009):

(58) [[*as Johanna read ~~book~~*]]: ιz_e[read(z)(Johanna) & book(z)]

This individual then composes with *same* in precisely the same way as the selected index does in anaphora, as shown in (59):

(59)

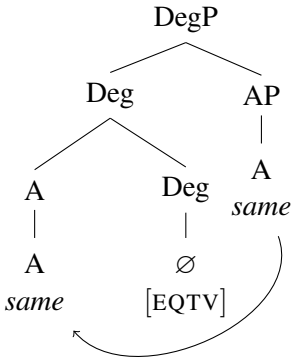


In (59), identity is established between the matrix token of 'book' and the *book that Johanna read*, rather than with an antecedent. I return to the internal composition of the *as*-relative and further discussion of this construction in Chapter 4.

2.3.5 Same: Deg or A?

I now return to the question of whether to treat *same* as an adjective or as a degree head. Oxford (2010) puts forward two options to account for the degree-like behavior of *same*. In the first option, shown in (60a), *same* moves from its base adjectival position as a specifier of Deg, which itself is null. In the second option, shown in (60b), *same* is base-generated as an adjective hosted by a degree head (p. 34):

(60) a. *Same is A*



b. *Same is part of Deg*

While the two options presented in (60) differ conceptually, it is not possible to differentiate the two based on word order alone. I therefore maintain the notion that *same* does not undergo movement, and argue that it is base-generated not as an adjective but as a degree head (the importance of which is emphasized in Chapter 3, in the discussion of Washo).

I note that there is also historical evidence against the treatment of *same* as adjectival in category, which comes from Breban's (2010) claim that *same* did not develop historically as an adjective (which she terms the 'lexical attribute' use), but as an intensifier. This stands in contrast even to other elements expressing equation, such as 'identical', as well as the related anaphoric modifier 'different.' Breban suggests that the grammaticalization path shifted *same* as from an element "emphasizing identification to [one] establishing/contributing to the identification" (p. 240).

One question that naturally arises when evaluating the categorization of *same* is its ability to be modified by the elements 'very' (61a) and 'exact' (61b):

(61) a. Mary is reading the **very** same book as Johanna read.

b. Mary is reading the **exact** same book as Johanna read.

At first glance it appears that the presence of these modifiers contradict the status of *same* as Deg, as degree adverbs of this type are in complementary distribution with other degree heads, e.g., with comparative *-er* and *more*:

(62) a. *the very longer book

b. *the very more interesting book

However, they in fact differ from true degree adverbs in that they do not *increase* the degree to which the book that Johanna read is the same one that Mary is reading: rather, they seem to be emphatic markers on a par with Lasersohn's (1999) notion of *slack regulators*.

Importantly, these emphatic elements also co-occur with other degree elements that are do not allow modification by degree adverbs: superlatives. This is shown in (63a) for 'very', and in (63b) for 'exact' (which is perhaps somewhat degraded, but nevertheless attested online):[16]

(63) a. This mountain is **the very tallest** in all of the state.

b. ?Here's the girls at **the exact tallest spot** in the state, according to the marker.

In both superlatives and *same*-constructions of identity, 'very' and 'exactly' seem to be emphasizing the maximal end of the scale: degrees in the case of the former, and identity in the case of the latter. Such facts might be suggestive of the link between individual identity and degrees: identity in *same*-constructions targets degrees on a two-point scale: 1 or 0.[17]

Finally, I note that from a structural perspective, there are two options. Either these emphatic elements are adjuncts that attach to the entire DegP, or they are hosted in the specifier of Deg. I therefore conclude that the ability of such adverbs to modify *same* does not pose a real challenge

16. http://lifewithhiggs.blogspot.com/2012/06/elephant-rocks-and-taum-sauk.html

17. I thank Chris Kennedy for suggesting this idea to me.

to the treatment of *same* as a degree head.

2.3.6 Back to contraction

One of the major claims presented so far is that anaphora with and without *same* arise from different structures. This leads to the prediction that we should find morphosyntactic differences in anaphora with and without *same*. I show in this section that this prediction is borne out in German.

Recall the two types of definite articles found in Standard German, repeated from (12) and (13) below in (64) and (65). The weak form (64) is used when the referent of the DP is unique, and contracts with the preceding preposition; the strong form (64) is used when the referent of the DP is also anaphoric, and may not contract.

(64) *Unique 'weak' form*

Der Empfang wurde {**vom/**#**von dem**} Bürgermeister eröffnet.
the reception was by.the/by the mayor opened

'The reception was opened by the mayor.'

(65) *Anaphoric 'strong' form*

Fritz wohnt seit Jahren in einem groβen Haus. Er schwärmt {#**vom/von dem**}
Fritz lives since years in a big house. He raves from.the/from the

Haus.
house

'Fritz has lived in a big house for years. He raves about the house.'

Crucially however, as Schwarz himself points out, anaphoric *same* contradicts the anaphoric/non-anaphoric generalization that otherwise governs the distribution of the two articles.[18] As shown

18. Schwarz (2009) in fact shows this with the antiquated form *selbig* (on a par with English 'selfsame'), attributing the following to Angelika Kratzer. The facts are however the same with the modern variant *selb-*.

(i) Context: The defendent had befriended a Tuscan farmer in the year 1850.

Zwei Jahre später kaufte sie { **vom/**#**von dem** } **selbigen** Bauern einen Esel.
two years later bought she from.the/from the selfsame farmer a donkey
'Two years later she bought a donkey from the very same farmer.' (Schwarz 2009: 265)

in the minimal pair in (66) and (67), in anaphoric contexts involving *same*, the weak form of the article becomes acceptable in a clearly anaphoric DP (67):[19]

(66) Es hängt an einem Haus. { #**Am/an dem** } Haus findet ihr eine Jahreszahl...
It hangs on a house. On.the/on the house find you a date
'It's hanging on a house. **On the house** you'll find a date...'

(67) Es hängt an einem Haus. { **Am/**%**an dem** } **selben** Haus findet ihr eine
It hangs on a house. On.the/on the same house find you a
Jahreszahl...
date
'It's hanging on a house. On the same house you'll find a date...'

The puzzle posed by these examples is that anaphoric definite descriptions may surface with the weak form as long as *same* is present, while Schwarz's generalization predicts that all anaphoric DPs should make use of the strong, non-contracted form. This generalization therefore faces a real challenge from *same*.[20]

Schwarz leaves the problem of contraction and the behavior of *same* for future work. The present account however crucially predicts this type of variation in the morphology of anaphoric DPs with and without *same*, as the presence of *same* is indicative of a larger structure modifying the NP: the degree phrase it heads. I propose that this difference in structure blocks the formation of the anaphoric strong form, explaining the puzzling use of the weak form in anaphoric contexts in which *same* is present.

Recall the mechanism blocking contraction that I proposed in (24) and (25) above, repeated

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19. Variation is seen here among whether speakers accept the strong form with *same*. The crucial contrast however is that the weak form is allowed for all speakers, which is not the case when *same* is not present.

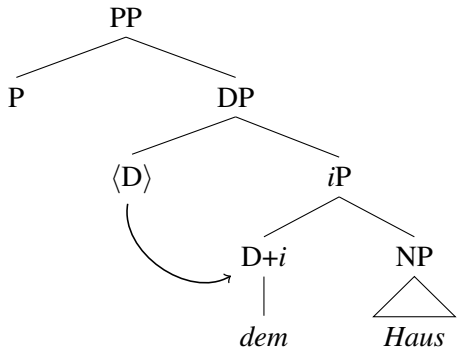
20. Schwarz notes that *same* seems to be acting as an index here, but offers the following property-denoting entry in (i), in contrast to his usual index of type e.

(i) $[\![\text{selbig}_i]\!]^g$: $\lambda x_e[x = g(i)]$ Schwarz (2009: 266)

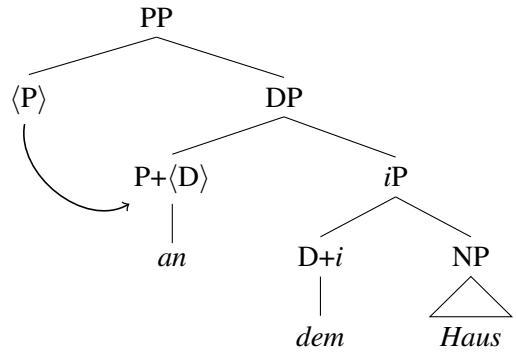
His suggestion is very much in line with the denotation I proposed for the index in definite descriptions without *same*.

below in (68) and (69). First, D lowers to the *i* when *i*P is present in the structure (68). Then, P lowers to D – now vacant – blocking contraction (69).

(68) *D-to-i Lowering*

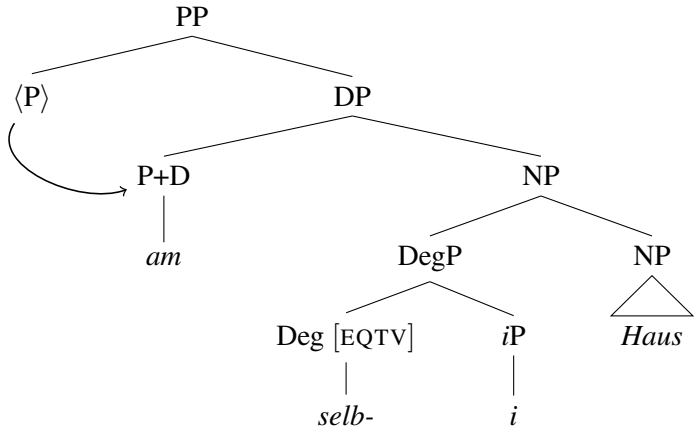


(69) *P-to-D Lowering*



When DegP is present in the structure however, this extra structure blocks D-to-*i* Lowering. Because D stays put, preposition-determiner contraction may freely occur after P lowers to D.

(70)



Note that this is one place where the semantics and morphology come apart: not all anaphoric DPs behave alike.[21]

In sum, we can understand the morphological differences in different types of anaphoric DPs

21. The same contraction facts are likewise true of the anaphoric/deictic adjective *dortig-* (which means something like 'over there,' thanks to Florian Schwarz for pointing this out). This particular example comes from the Süd Kurier newspaper (http://www.suedkurier.de/region/kreis-konstanz/konstanz/Alte-Liebe-rostet-nicht;art372448,1166442):

(i) Bernhard Stengele geht als Schauspieldirektor ans Theater Würzburg – keine leichte Aufgabe
Bernhard Stengel goes as play-director on.the Theater Würzburg – no easy task

by making reference to their underlying syntax. Taking stock, we saw in this section that the facts from German reveal that anaphora can arise from particular structural configurations: anaphoric DPs host an index that refers back to an antecedent, while DPs with *same* involve a degree frame, which may give rise to anaphora or introduce an *as*-relative. In the next section, I turn to discuss a more cross-linguistic view of the treatment of *same* as a degree head.

2.4 A cross-linguistic view

In this section I present data from the behavior of *same* cross-linguistically. I first show that *same* alternates between an anaphoric and clausally-modified use cross-linguistically. I then discuss some languages that encode *same* in a different way than those languages showing this alternation, and discussion the implications of those facts for the relationship between gradability and the equation of individuals.

2.4.1 Same alternates cross-linguistically

Importantly, we find an alternation between anaphora and *as*-relatives introduced by *same* cross-linguistically.[22] First, I show that this alternation is likewise observed with German *selb-*:

(71) Gestern hat Johanna *ein langes Buch*$_i$ zu Ende gelesen. Jetzt liest Maria **das-selbe** **Buch**$_i$.
yesterday has Anya a long book to end read. Now reads Johanna the-same book

'Johanna finished reading a long book yesterday. Now Maria is reading the same book.'

anaphora

---

angesichts der andauernden Finanzkrise **am** **dortigen** Haus ...
in.the.face.of the continuing financial.crisis on.the over.there house ...

'Bernhard Stengele goes to the Würzburg Theater as play director – no easy task in the face of the continuing financial crisis on the house there ...'

22. See Charnavel (2015) for data on *same* from a wide variety of languages.

(72) Maria liest **das-selbe Buch** [*wie Johanna*].
Johanna reads the-same book how Anya
'Maria is reading the same book as Johanna.' *as-relative*

The examples in (73)- (74) show the examples from Greek *idhj-* (Natalia Pavlou, p.c.):

(73) Persi dhjavasa *ena iperocho vivlio*$_i$. Tora enas filos mu dhjavazei **to idhjo**
last.year read a great book. Now a friend mine reads the same book.

vivlio$_i$.
book.

'Last year I read a great book. Now a friend of mine is reading the same book.'

anaphora

(74) O Yannis dhjavasa **to idhjo vivlio** [*me ton Mbili*].
The John read the same book with the Bill
John read the same book as Bill. *as-relative*

Examples (75) through (76) show the examples from Spanish *mismo* (Karlos Arregi, p.c.):

(75) Acabé de leer *un libro largo*$_i$ la semana pasada. Ahora lee Pedro **el mismo**
finished PRT read a book long the week past now reads Pedro the same

libro$_i$.
book

'I finished reading a long book last week. Now Pedro is reading the same book.'

anaphora

(76) Juan leyó **el mismo libro** [*que Pedro*].
Juan read the same book that Pedro
'John read the same book as Pedro.' *as-relative*

Finally, examples (77)- (78) show the alternation with Turkish *aynı* (Merve Sarıışık, p.c.):

(77) Merve dün *uzun bir kitap*$_i$ okudu. **Aynı kitab-ı**$_i$ ben bugün okudum.
Merve yesterday long one book read same book-ACC I today read
'Merve read a long book yesterday. I read the same book today.' *anaphora*

(78) [*Merve'-yle*] **aynı kitab-ı** okudum.
Merve-with same book-ACC read
'I read the same book as Merve.' *as-relative*

These data show that the alternation between the anaphoric reading of *same* and the reading involving an overt standard is available in a variety of languages, suggesting that this is not a phenomenon limited to Germanic.

2.4.2 Divorcing gradable and individual 'same'

There is also cross-linguistic evidence for the idea that individual anaphora with *same* piggy-backs on degree structure elsewhere in the language. We see a potential for language shift in this regard, which can be seen in languages such as Russian and Hindi. In both of these languages, *same* is lexicalized only on its gradable use, and not on a use in equating individuals.

In cross-sentential anaphora in Russian, a demonstrative (*tu*) is used along with an intensifier (*zhe*) in order to convey the meaning of sameness (Matushansky 2010; Ksenia Ershova, p.c.):

(79) Dzhon prochital $knigu_i$. Bill prochital **tu zhe knigu**$_i$.
John read book. Bill read that EMPH book.
'John read a book. Bill read the same book.' *anaphora*

In order to form an embedded clause on a par with an *as*-relative, the invariant complementizer *chto* is used. The complementizer *chto*, being invariant, is not used in the same dedicated way as the preposition *as* is in *as*-relatives – essentially forming a relative clause:

(80) Lena prochital **tu zhe knigu** [*chto i Vera*].
Lena read that EMPH book that and Vera
'Lena read the same book as Vera.' *relative clause*

The facts are however different when considering equation of kinds or types, rather than individuals. In this case, the matrix demonstrative *takuj-* is used, rather than *tu*:

(81) Dzhon prochital *knigu*$_i$. Bill prochital **takuju zhe knigu**$_i$.
John read book. Bill read such EMPH book.
'John read a book. Bill too read such a/the same book.' *anaphora*

In the case of the clausal modifier, the *wh*-element *kak* ('how') embeds the clause, rather than the invariant *chto*:

(82) Lena kupila **takuju zhe knigu** [*kak i Vera*].
Lena bought such EMPH book **how** and Vera
'Lena bought such a/the same book as Vera.' *relative clause*

Importantly, the embedding complementizer in (82) is precisely the same *wh*-element that introduces the *as*-relative in degree equatives (Matushansky 2010):

(83) Eta gora **takaja zhe** vysokaja [*kak i ta*].
this mountain such EMPH tall how and that
'This mountain is as tall as that one.'

Taken together, these facts show that the use of *same* does in fact have a gradable use in Russian, while this type of syntactic frame has not been adopted when it comes to equating individuals.

The facts in Hindi are similar to the facts in Russian. In order to express cross-sentential anaphora, the demonstrative *vahi* is used. As in Russian, this demonstrative is comprised of two morphemes: *vah*, a demonstrative, and *hi*, an emphatic marker. An example of this demonstrative in cross-sentential anaphora is given below (Yash Sinha, p.c.):[23]

(84) Yash ne kal Chicago mein *ek lambe aadmi*$_i$ ko dekha. Aaj maine
Yash ERG yesterday Chicago LOC one tall man DOM saw today 1.ERG
us-i aadmi$_i$ ko dekha.
that-EMPH man DOM saw
'Yesterday Yash saw a tall man in Chicago. I saw the same man today.'
anaphora

23. *Vah* has the allomorph *us* when followed by a DOM marker.

Similarly, what one could translate as an *as*-relative in English is simply a relative clause in Hindi, just as it is in Russian:

(85) Maine **vah-i** kitaab parhi [*jo Yash ne parhi*].
1.ERG that-emph book read that Yash ERG read
'I read the same book that Yash read.' *relative clause*

The take away here is that a dedicated lexical item for *same* is not always available cross-linguistically, and that we see variation within languages with respect to whether they use *same* to equate both kinds/types and individuals, or just the former. Another important point is that while demonstratives are perfectly capable of expressing anaphora, they do not take a degree-frame syntax and therefore do not embed *as*-relatives. This fact is also clearly observable in English:

(86) Mary recently watched *an award-winning film*. I watched **that (very) film** last night.

(87) *I watched **that (very) film** [*as Mary did* last night].

Instead, demonstratives are only compatible with a relative clause, just as in Russian and Hindhi:

(88) I watched **that (very) film** *that Mary did* last night.

I note here that even in languages that make use of the alternation for both gradable and non-gradable *same*, there can be variation in the lexical item encoding equation. For example, it is well-known that German has another word for *same* apart from *selb-*, *gleich-* which is used prescriptively to indicate equation of types or a high degree of similarity, rather than of tokens. The entry in the Duden online dictionary contains some of the following entries for *gleich-* (translations my own):[24]

24. https://www.duden.de/suchen/dudenonline/gleich

(89) ‘**gleich-**’:

a. *einem anderen Menschen, einer anderen Sache gleichend*

‘resembling another person, another thing’

b. *mit einem Vergleichsobjekt in bestimmten Merkmalen, in der Art, im Typ übereinstimmend*

‘consistent with an object of comparison in certain characteristics, in kind, in type.’

The entry for *der/die/dasselb-* (which forms a single word with the definite determiner, and which is in fact listed as having the category of a pronoun), on the other hand, receives the following definition:[25]

(90) ‘**der/die/dasselb-**’:

dieser (sich selbst Gleiche), und kein anderer

‘this (self-identical) one, and no other"

Duden however notes that *gleich-* may be used for *selb-* colloquially, and it is often noted by speakers of the language that they use the two forms interchangeably, indicating that a shift in meaning is in progress. Importantly however, *gleich* participates in the same alternation that *selb-* does; this alternation is exemplified in (91) and (92):

(91) Mary fährt *ein schönes Auto*$_i$. Johanna fährt **das gleiche**$_i$ **Auto** in schwarz.
Mary drives a nice car Johanna drives the same car in black
‘Mary drives a nice car. Johanna drives the same car in black.’

anaphora

(92) Johanna fährt **das gleiche Auto** [*wie Mary*].
Johanna drives the same car as Mary
‘Johanna drives the same car as Mary.’ *as-relative*

25. https://www.duden.de/rechtschreibung/derselbe

Data such as these suggest that German differentiates between similarity and token identity in a way that English doesn't; English *same* is polysemous. Support that *gleich-* makes use of the same degree syntax as *selb-* is moreover supported by the fact that it displays the same contraction effect in anaphora as *selb-*, as shown in (93):[26]

(93) Ein unbekannter Täter hat *an einem Mercedes*$_i$ die Radbolzen gelöst. Bereits
an unknown perpetrator has on a Mercedes the wheel.bolts loosened already

wurden **am gleichen Auto**$_i$ die-selben Schrauben schon einmal gelöst.
were on.the same car the-same screws already once loosened.

'An unknown perpetrator loosened the wheel bolts on a Mercedes. The same screws on the same car had already been loosened.'

This is consistent with the idea that the usual environment leading to the strong article form is blocked by the intervening material contributed by the DegP, just as we saw with *selb-* in §2.3.6. The precise relationship between similarity, kinds, types, and tokens is highly relevant to the discussion here, but is unfortunately beyond the scope of this dissertation. The reader is referred to Alrenga (2007, 2009) for discussion of these issues.

2.5 Related issues

In this section, I turn to discuss two further issues relating to the above treatment of the structure of anaphora and sameness. These are the use of *same* in anaphoric contexts that seem to refer to events, rather than individuals, as well as with the relationship between *same* and demonstrative morphology.

26. Abbreviated for clarity from https://www.presseportal.de/blaulicht/pm/110978/3608337.

2.5.1 'Same' as an event anaphor

The proposal made above that *same* serves to equate individuals raises the question of what types of individuals can be equated. A possible extension of this analysis comes from recent work by Hardt et al. (2012) and Hardt & Mikkelsen (2015) on the use of *same* in what these authors refer to as deep anaphoric uses of *same*. This use is exemplified in (94) (Hardt et al. 2012: 2):

(94) I *voted in favor*$_i$. I appeal to my colleagues to do **the same**$_i$, for the good of European citizens.

The analyses of Hardt et al. (2012) and Hardt and Mikkelsen (2015) focus on the differences between *same* and other types of event anaphors, as well with the modifier *different*, ultimately concluding that the use of *same* requires both additivity as well as reference to distinct events (see also Carlson 1987). Hardt et al. (2012) cite the contrast between examples like the following in support of the latter claim:

(95) a. #John *caught a big fish*$_i$, and he did **the same**$_i$ without any fishing equipment.

b. John *caught a big fish*$_i$ last week, and he did **the same**$_i$ yesterday without any fishing equipment.

While I do not give an explicit account of this phenomenon, the meaning of *same* in such examples can be captured by my analysis if the index in the meaning I proposed for anaphoric DPs can pick out an event as its antecedent. This is not a surprising claim, given that both events and individuals are in the domain of individuals (Elliott 2016), and such should both be subject to reference valuation by an assignment function. While I do not address the types of semantic effects discovered in the above works, a possible direction for future work is to unite these semantic effects with the structure I have proposed, enriching the meaning of *same* to the account for the difference between anaphora with and without this modifier.

I would also like to note here that this type of anaphor is available as an event anaphor cross-

linguistically, suggesting that its use as an anaphor should be assimilated to the individual anaphora discussed above. I demonstrate this below with data from Hebrew (Itamar Francez, p.c.) and Turkish (Merve Sarıışık, p.c.):[27]

(96) John *halax la-xanut*$_i$ ve ani asiti et **oto davar**$_i$.
John went to.the-store and I did ACC same thing
'John went to the store and I did the same.' *Hebrew*

(97) Bill dün *bisiklet-le market-e gitti*$_i$, bugün John-'in da **aynı-sı-nı**$_i$
Bill today bike-INST. store-DAT went, today John-GEN also same-POSS-ACC

yap-ma-sı gerek.
do-SUBJ-POSS be.necessary

'Yesterday Bill went to the store by bike and today John has to do the same.' *Turkish*

In addition to its cross-linguistic prevalence, it is important to note moreover that *same* has an even broader range than discussed by Hardt et al. (2012). The expression *the same* can act not only as a deep-anaphor in expressions with verb phrase ellipsis (or its cross-linguistic correlate), but also with all other types of verbs that allow null complement anaphora (see also Elliott (2016)):

(98) a. I want **the same/so/that**.

b. I did **the same/so/that**.

c. I said **the same/so/that**.

I show below that *same* is also available for use outside of the complement of *do* in a variety of languages, citing examples with *say* again from Hebrew and Turkish:[28]

(99) Amarti le-miriam *še ani zoxer ota*$_i$, ve-hi amra li **oto davar**$_i$.
I.told to.the-miriam that I remember her, and-she told me same thing
'I told Miriam I remembered her and she told me the same thing.' *Hebrew*

27. For the sake of clarity, I do not gloss all of the morphemes in the Turkish examples.

28. Here the adjective in Turkish is nominalized with the possessive suffix *-sı* because it must take nominal inflection. Curiously in Hebrew, while the personal pronominal use of *oto* requires no nominal restriction, its use as *same* requires a complement, making use of *davar* ('thing') to satisfy this requirement when no other noun is appropriate.

(100) John Mary'-ye *onu sev-diğ-i-ni*$_i$ söyledi, Mary de **aynı-sı-nı**$_i$
John Mary-DAT him love-NMLZ-POSS-ACC said Mary also same-POSS-ACC

John'-a söyledi.
John-DAT said

'John told Mary he loved her, and Mary said **the same** to John.' *Turkish*

I leave a more detailed investigation of the use of *same* in event and null complement anaphora to future work.

2.5.2 The relationship between same and demonstratives

As is immediately clear from its obligatory co-occurrence with the definite article, there is a tight connection between the modifier *same* and definiteness. While *same* and *the* do not form a single word in English orthography as they do in Dutch and German, Breban (2010) points out that the two co-occur in even the earliest citation for *same* in the Oxford English Dictionary (OED):

(101) He mihhte makenn cwike menn þær off **þa same staness**, þat stodenn þær bi Sannt Johan.

'He could make living men there of **the same stones**, that stood there by Saint Johan.'

circa 1200 Ormin 9914, OED vol. 9:74 (cited by Breban (2010: 203))

Aside from its obligatory co-occurence with the definite article in English, we also find a close connection between the modifier *same* and demonstrative-type elements across languages. Some examples of this are shown below from unrelated languages such as Amharic, Basque, and Latin:

(102) a. ya-w
that-DEF.AGR
'the same' Amharic; Kramer (2009: 32)

b. ber-a
BER-the
'the same/he' Basque; Karlos Arregi, p.c.

c. i-dem
that-DEM
'the same' Latin

Leu (2008, 2015) argues that *same* is in fact part of a complex demonstrative, citing evidence from languages such as Swiss German. In this language, the form of the distal demonstrative 'that' simply *is* the word for *same* (which interestingly has only a token reading in Swiss German), as shown in (103):[29]

(103) Ich weeti **di säb** suppä.
I would.like the same soup
'I would like that very (bowl of) soup there.' Leu (2008: 39)

The same is true for demonstratives in the Colmar dialect of Swabian (Russ 2013). While I cannot comment on the exact diachronic relationship from demonstratives to degree elements, there is literature supporting this grammaticalization path. In particular, Oxford (2010) argues that elements exhibit movement upward in the tree, from A to Deg to D, on a par with other processes of deictification (this upward path is also discussed in Breban 2010). The relationship between a modifier like *same* and demonstratives might therefore be indicative of diachronic change in motion.

Finally, I turn to discuss a language that shows a clear relationship between the degree element *same* and demonstratives: Modern Hebrew. The Modern Hebrew word for *same*, *ot-*, is argued by Matushansky (2010b) to be a combination of the accusative marker *-et* and person inflections from Classical Hebrew. Hebrew *ot-* is well-behaved for a degree element in the sense that it alternates between an anaphoric (104) and clausally-modified (105) use:

29. See also Weber (1964) for Zurich German.

(104) Gamarti etmol *sefer me'ule*$_i$, ve-axSav raiti ba-UBahn baxura koret
finished yesterday book excellent and-now saw in.the-UBahn young.woman read

et **oto** **(ha-)sefer**$_i$.
ACC same (the-)book

'I finished an excellent book yesterday and I just saw a young woman reading the same book on the UBahn.'

anaphora

(105) karati **et** **oto** **sefer** [*kamoxa*].
read.1.SG ACC same book like.you
'I read the same book as you.' *as-relative*

However, *ot-* has other intuitively related uses, for example as a demonstrative (106):[30]

(106) Context: Once upon a time there lived a dog$_i$.

Oto$_i$ kelev xay ba-midbar
that dog lived in.the.desert

'That dog lived in the desert.'

In addition to its demonstrative use, *ot-* is also used as the accusative third person pronoun:

(107) ra'iti **oto**
I.saw him
'I saw him.'

The generalization that emerges from these data is that *ot-* contributes the meaning of *same* whenever it takes a nominal complement; otherwise it is interpreted as a pronoun. While I do not give an analysis of the Hebrew facts, they are an interesting topic for future research on the relationship between *same*, demonstratives, and DP structure.

30. Though, it's admittedly hard to differentiate the meaning here in English between a demonstrative and *same*.

2.5.3 Conclusion

In this chapter, I have given an analysis for two distinct structural sources of anaphora in the DP. First, I provided structural evidence for semantic claims that definites may house an index layer, giving rise to anaphora. Second, I showed that anaphora involving the modifier *same* on the other hand arise from a distinct underlying source: they involve a degree frame. Based on the ability of *same* to undergo the anaphora/overt modification alternation, I proposed to treat *same* as a degree head, drawing a parallel to the degree heads *-er/more* and *such*. I provided morphological evidence for the distinctness of these two types of anaphora by highlighting differences in the form of the definite article in with and without *same*. Finally, I provided a cross-linguistic view of *same*-equatives, showing that not all languages make use of *same* on its individual-equating reading.

CHAPTER 3

DP STRUCTURE, ANAPHORA, AND SAMENESS IN WASHO

3.1 Introduction

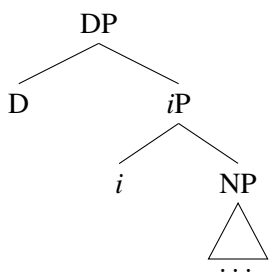
The general proposal given above for the structural sources that give rise to anaphora and sameness in the DP makes predictions about the type of data we should see cross-linguistically. First, languages should offer morphological evidence for structural complexity in anaphoric definites. This prediction follows from the argument (following i.a. Elbourne 2005; Schwarz 2009; Simonenko 2014; Hanink 2017) that anaphoric DPs contain a structurally-encoded index housed in its own projection. We have already seen evidence for this in German, which differentiates morphologically between anaphoric and non-anaphoric forms of the definite article. However, more evidence is needed to test this hypothesis in additional, preferably unrelated, languages.

Second, the proposal predicts that a language that does not make use of gradable expressions in general will not lexicalize *same*. This is because I have argued that *same* is a degree head – piggybacking on degree structure despite a lack of a necessarily degree semantics – and so a language must have access to a degree syntax and semantics more generally if it is able to lexicalize *same*.[1] The overarching aim of this section is therefore to give an analysis of the DP in Washo, an isolate Native American language, that shows that both of these predictions are borne out.

After giving some background on the language, I move on to show different types of evidence that DPs in Washo host a structurally-encoded index, and furthermore show that the morphology of Washo supports the particular syntax of the DP put forward in Chapter 2, according to which an index projects its own phrase and modifies the NP. I repeat this structure in (1), from (18) in the previous chapter:

1. Of course not all accounts make use of degrees in the ontology to account for gradable expressions, e.g. accounts that treat gradable adjectives as context-sensitive, vague predicates (i.a. Kamp 1975; Klein 1980; Ross 2011.)

(1)



To argue for this structure, I begin with the discussion of the third person pronoun in Washo, *gí:/gé:*. I show that while this morpheme may have the appearance of a simplex pronoun, it is also used in environments suggesting that it in fact has a more complex structure and interpretation than can be seen on the surface. Based on this, I propose that this pronoun overtly realizes the index in the structure of anaphoric DPs in Washo. I then turn to discuss the structure of demonstratives in the language as well as the role they play in internally headed relatives, lending further support to the claim that anaphoric definites in the language are structurally complex.

Finally, I present a different set of data from Washo in order to test the prediction that a language without degree semantics or morphology should not lexicalize a word for *same*. After presenting previous work showing that Washo is in fact a degree-less language (Bochnak 2013, 2015), I show that the prediction is borne out: Washo lacks a single lexicalized word with this meaning. Importantly, this chapter highlights the role that careful fieldwork can play in testing linguistic theory, by providing evidence for an analysis based on Germanic languages that nevertheless is shown to extend to this isolate.

3.2 Background on the language

Washo is a severely endangered Native American language spoken around Lake Tahoe in the United States.[2] The data in this chapter come from my fieldwork with speakers from the communities in Woodfords, California (Hung A Lel Ti Band) and Dresslerville, Nevada (Pau Wa Lu Band) from September 2015 - August 2017. Washo is an isolate in the Great Basin region, though

2. Washo Documentation Project at the University of Chicago, P.I. Alan Yu: http://washo.uchicago.edu

it has been linked to the proposed Hokan group, whose existence is controversial (Campbell, 1997; Mithun, 1999). Only around ten elderly native speakers of Washo are still living. Early scholarship on the language comes from a collection of stories, texts, and grammars on the language: Kroeber (1907); Lowie (1939); Jacobsen (1964). Washo is an SOV language with mostly head-final characteristics, but is neutrally head-initial within the DP.

3.3 The suffix *-gi/ge* in clausal nominalizations

I begin discussion of the Washo DP by examining the third person pronoun in the language, which alternates between a nominative (*gí:*) and non.nominative (*gé:*) form. The table below gives the paradigm for independent pronouns in Washo, with the third-person pronominal forms that I will discuss in this chapter in bold (Jacobsen (1977: 57)).[3]

Table 3.1: Independent Pronouns in Washo

Person		singular	dual	plural
1	exclusive	lé:	léši	léw
	inclusive		léšiši	léwhu
2		mí:	míši	míw
3	nominative	**gí:**	gíši	gíw
	non-nominative	**gé:**	géši	géw

The examples in (2) and (3) moreover show the difference between the nominative and non-nominative forms of the third-person pronoun (Jacobsen 1979: 151):[4]

3. I have made one terminological adjustment to this table: Jacobsen (1977) writes 'subjective' rather than 'nominative', and 'objective' rather than 'non.nominative.' I choose the nominative/non-nominative distinction because *-gé:* is used in all oblique case positions (e.g. when followed by a case marker or other postposition), and not just in object position.

4. The orthography used here is adopted from Jacobsen's (1964) dissertation. Symbols deviating from the IPA are: L: [l̥]; š: [ʃ]; y: [j]. All examples come from the author's fieldwork unless otherwise noted.

(2) *Nominative form*

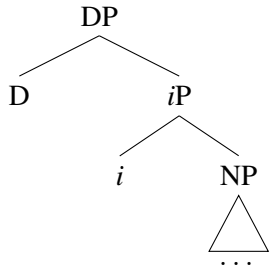
gí: pélew ʔ-íʔw-i
3.PRO jackrabbit 3-eat-IND
'He's eating the jackrabbit.'

(3) *Non-nominative form*

gé: pélew ʔ-íʔw-i
he.NON.NOM jackrabbit 3-eat-IND
'He's eating it, the jackrabbit.'

In what follows, I argue that the structure and interpretation of this pronoun is more complex than it might initially appear to be. To preview the proposal, I argue that this pronoun is in fact the spell out of the index head in the structure that I proposed for anaphoric DPs in (18) in the previous chapter. The underlying structure of the Washo DP is as shown in (4), in which *i*P modifies NP.

(4) *Structure of the anaphoric DP in Washo*



The idea that *gí:/gé:* expones part of a larger DP structure is supported by its role as a nominalizer in clausal nominalizations. After presenting the structure of clausal nominalizations in Washo, I turn to give evidence for this claim from the interpretative properties of internally headed relatives and the structure of demonstratives in the language.

3.3.1 The structure of clausal nominalizations

Many clausal nominalizations in Washo are formed through the suffixation of a third-person pronoun onto an entire embedded clause, turning it into a nominal argument of the matrix verb.[5] The suffixal form alternates between a nominative and non-nominative form, mirroring its use as an independent pronoun elsewhere in the language. In the case of nominalizations, this case distinction is reflected in the role that the nominalized argument plays in the matrix clause. Take for example the following two examples of internally headed relatives in the language. In (5), the entire nominalized clause ('the girl that the man saw') plays the role of the subject of the matrix verb ('see'). For this reason, the nominalizing suffix is *-gi*, the nominative form.[6]

(5) *Nominative form*

[$_{DP}$ [$_{CP}$ t'é:liwhu šáwlamhu ló:t ʔ-í:gi-yi-š]**-gi**] ʔwáʔ ʔ-éʔ-i
man girl yesterday 3-see-IND-SR-NMLZ here 3-COP-IND

'The girl that the man saw yesterday is here.'

In (6) on the other hand, the nominalized clause ('the coyote that the boy saw') is the object of matrix 'see', and the non-nominative form of the nominalizer is used:

(6) *Non-nominative form*

[$_{DP}$ [$_{CP}$ mé:hu géwe ʔ-í:gi-yi-š]**-ge**] lé:-saʔ l-í:gi-yi
boy coyote 3-see-IND-SR-NMLZ 1-also 1-see-IND

'I also saw the coyote that the boy saw.' Hanink (2016: 122)

Notably, the fact that these clauses are truly DPs can be seen in examples such as the following, in which a postposition suffixes onto the entire nominalized clause (see also Peachey (2006)):

5. Other nominalizations are formed, for example, by the locative suffix *-da*.

6. The pronouns are only long and stressed when used in their independent form. In all other environments (see below), they are short and unstressed.

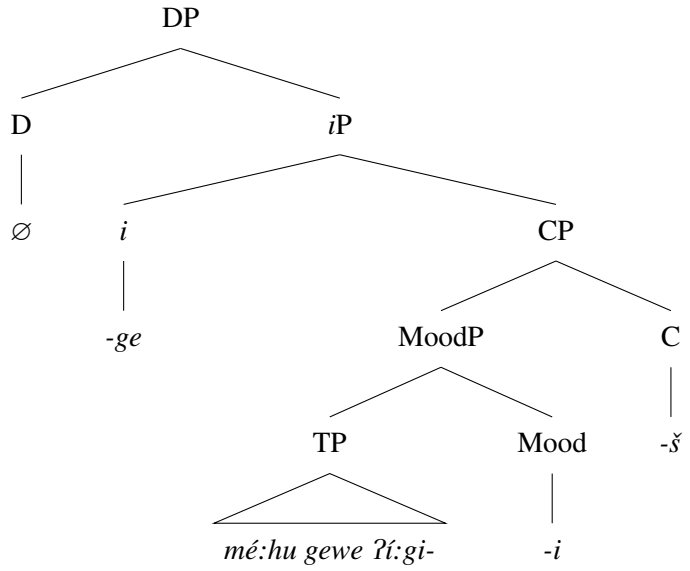
(7) [$_{DP}$ [$_{CP}$ séwɨt ge-séʔš-uweʔ-i]**-ge**]-**lu** ga-Lók'aš-ha
porcupine IMP-take-hence-IND-NMLZ-INST IMP-scare-CAUS
'Take a porcupine and scare him with it.' Jacobsen (1981: 111)

While Peachey 2006; Hanink 2016; Hanink & Bochnak 2018 assume a structure for clausal nominalizations according to which the *-gi/ge* suffixes are D heads that nominalize full CPs, I propose that *-gi/ge* is in fact the exponence of the *i* layer, which is selected for by a null D head.[7]

Evidence for full clausal status within the nominalization comes from the fact that these clauses host tense and mood information.[8] These nominalizations also contain the high switch reference marker *-š*, which surfaces on embedded verbs and tracks subject identity across clauses. I treat the switch reference marker as a realization of embedded C, following Arregi & Hanink (To appear) (who build on proposals by Finer (1985) and Watanabe (2000)). The structure I propose for a nominalization such as (8a) is then as represented in (8b):

(8) a. [$_{DP}$ [$_{CP}$ mé:hu géwe ʔ-í:gi-yi-š]-ge] lé:-saʔ l-í:gi-yi
boy coyote 3-see-IND-SR-NMLZ 1-also 1-see-IND
'I also saw the coyote that the boy saw.'

b.



In the next section, I focus on one particular type of clausal nominalization in Washo: internally

7. These authors also propose that D is right-branching, but I do not adopt that proposal.

8. Washo lacks obligatory tense morphology. See Bochnak (2016) for more details on tense in Washo.

headed relatives. I show that this construction lends evidence to a treatment of *-gi/ge* as a complex element involving a null definite article, rather than a mere pronoun.

3.4 Internally headed relatives

Relative clauses in Washo are internally headed (Jacobsen 1964, 1981). As described by Langdon (1977) and Culy (1990), internally headed relatives are essentially nominalized sentences. An example of an internally headed relative in the language is shown in (9). The 'semantic head' of the relative clause is *gawáyɨʔ* ('horse'), which importantly remains in its normal object position within the clause. Note that 'head' here is not used in its typical syntactic sense, as the head of the embedded clause is C and the semantic core of the general clause is phrasal (Basilico 1996).

(9) [$_{DP}$ [$_{CP}$ Adele **gawáyɨʔ** ʔ-í:gi-yi-š]-gi] ∅-múʔuš-uwe-ʔi
Adele horse 3-see-IND-SR-NMLZ 3-run-hence-IND
'The horse that Adele saw is running away.'

Relative clauses of this type therefore contrast with externally-headed relatives (as in the English translation of (9)), in which the semantic head occurs externally to the relative clause).

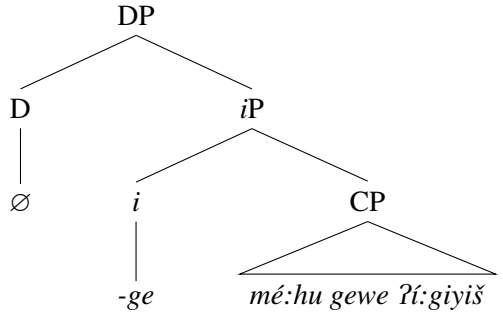
Internally headed relatives in Washo are always formed through clausal nominalization by the suffix *-gi/ge*. In this construction, the embedded clause must come to denote an individual; this is because the entire clause must serve as an argument of the matrix verb. In (10) for example (repeated from (6) above), the entire relative clause is the object of the matrix verb 'see.'

(10) [$_{DP}$ [$_{CP}$ mé:hu géwe ʔ-í:gi-yi-š]-ge] lé:-saʔ l-í:gi-yi
boy coyote 3-see-IND-SR-NMLZ 1-also 1-see-IND
'I also saw the coyote that the boy saw.'

However, recall that the meaning of the embedded clause would be that of a proposition if the nominalizing morphology were absent: this means that if the meaning of the nominalizer *-gi/ge* were that of a typical pronoun under the standard view (i.e., type e), composition would fail, as

it could not compose with the propositional CP. For this reason, I argue in what follows that the nominalizer in fact has the combined semantics of a definite article and index, just as it does in anaphoric definites in German.[9] This means in the case of a relative clause, the complement of the index is not an NP, but the entire embedded CP, as shown in (11):

(11) *Clausal nominalization*



In the next two sections, I argue that the purpose of the index layer in the matrix clause in this analysis is to bind an open variable in the proposition denoted by the embedded CP.

3.4.1 Binding the semantic head in internally headed relatives

The meaning of the embedded clause without the nominalizing morphology is simply the meaning of the proposition as it would be in the absence of nominalization:

(12) [[*mé:hu gewe ʔí:giyiš*]]:
saw(ιy_e[coyote(y)])(ιz_e[boy(z)]))

As I mentioned in the previous section, however, this is incompatible with the meaning of a relative clause: the relative clause must come to denote an individual. I therefore argue in the next section that the nominalizing suffix *-gi/ge* achieves precisely this result by ι-binding an open variable in

9. cf. Hanink (2016), in which I argue that *-gi/ge* has the meaning of a Strawsonian definite article, and realizes a D head lacking an index, as in (i):

(i) [[*gi/ge*]]: $\lambda P_{\langle e,t\rangle} \iota x_e$[P(x)] Hanink (2016: 124)

the proposition denoted by the relative clause, returning a unique individual.

The first question that this proposal raises is where the open variable in the proposition comes from, given the meaning in (12). Under the standard analysis of internally headed relatives, an indefinite head must supply a restricted variable that is bound by a relative operator higher up in the clause (Jelinek 1987; Basilico 1996). This is crucial, as in order to arrive at the meaning of a relative clause, some type of binding is required (Williamson 1987; Jelinek 1987, 1995; Srivastav 1990, 1991; Culy 1990; Basilico 1996). This means that the semantic head in the current example would be the following under a Heimian analysis of indefinites, in which indefinites are merely restricted variables (Heim 1982).

(13) [[*géwe*]]: coyote(x)

In what follows I pursue an alternate analysis: that the semantic head is definite, not indefinite, and is instead bound in virtue of the index in its structure, which contributes an anaphoric meaning:

(14) $[[géwe]]^g$: $\iota x_e[\text{coyote}(x) \,\&\, x = g(i)]$

This proposal is part of the claim that Washo has a D layer, despite the fact that it lacks an overt form of the definite article. I return to this aspect of the current discussion in §3.6.1. I also return to the broader significance of this claim in the discussion of the so-called indefiniteness restriction in internally headed relatives in §3.4.3.

3.4.2 The role of the nominalizer

Given the assumption that the semantic head of the relative contains a free variable, the meaning of the embedded clause is now as follows:

(15) [[*mé:hu gewe ʔí:giyiš*]]:
saw($\iota y_e[\text{coyote}(y) \,\&\, y = g(i)]$)($\iota z_e[\text{boy}(z)]$))

As I mentioned in the previous section, however, this is incompatible with the meaning of a relative clause: the relative clause must come to denote an individual. Another problem with this meaning is that there is now a free variable that must be bound in order to establish the semantic head of the relative. I solve both of these problems in the same way, by arguing that the nominalizing suffix *-gi/ge* both ι-binds the open variable in the proposition denoted by the relative clause, and returns a unique individual.

Recall the meanings for D and *i* (the same for those in the analysis of anaphora in the previous chapter) in the nominal layer of the relative clause, given in (16):

(16) a. [[D]]: $\lambda \mathrm{P}_{\langle e,t \rangle} \iota \mathrm{x}_e [\mathrm{P(x)}]$

b. $[\![i]\!]^g$: $\lambda \mathrm{x}_e [\mathrm{x = g}(i)]$

Note that, taken as is, the presence of the unbound variable in the meaning of the index in (16) will leave a free variable in the meaning of the DP at the end of composition. This was precisely the desired result in anaphora, as this variable is what allows for reference back to an antecedent. In the case of internally headed relatives in Washo however, this meaning is the incorrect one for two resaons. First, it will result in a type clash: the property meaning of the index in (16b) cannot compose with the meaning of the propositional embedded clause in (15). Second, the resulting DP will be necessarily anaphoric, which it is not.

One might try to resolve the issue of the type clash by arguing that the meaning of the embedded clause is property-denoting, involving the binding of the semantic head of the relative clause by an unselective binder (Hanink 2016). Indeed this is a typical analysis of internally headed relatives, whose semantic heads are argued to be bound either by movement or some other mechanism resulting in the formation of a property meaning (Basilico 1996). This solution does not solve the second problem, however: assuming that the property-meanings of *i* and CP then compose via Predicate Modification, we are still left with a meaning for the nominalized clause that is necessarily anaphoric. I illustrate the problem by walking through the meaning of the embedded

clause that I proposed in Hanink (2016).[10]

First, the proposition denoted by the embedded clause is formed (17a). This proposition contains a free variable: the semantic head of the relative clause, in this case *gewe* ('coyote'), which is treated as a restricted variable (following Basilico 1996). This variable is then bound by an unselective binder at the periphery of the embedded clause, turning the open proposition into a property (17b).

(17) *Hanink's (2016) derivation of an IHRC*:

a. embedded clause

[[*mé:hu gewe ʔí:giyiš*]]:

$\exists e_s$[see(x_{coyote})(e) & agent(ιz.boy(z))(e)]

b. unselective binding

[[*mé:hu gewe ʔí:giyiš*]]:

$\lambda x_e \exists e_s$[see(x_{coyote})(e) & agent(ιz.boy(z))(e)]

At this point of the analysis, I then proposed that the property meaning in (17) is ι-bound by the nominalizer *-ge*, which has the non-anaphoric meaning of a Strawsonian definite article:

(18) [[*-gi/ge*]]: $\lambda P_{\langle e,t \rangle} \iota x_e$[P(x)] Hanink (2016: 124)

This achieves the desired result: the internally headed relative now denotes an individual that can act as an argument of the matrix verb:

(19) [[*mé:hu gewe ʔí:giyišge*]]:

$\iota x_e \exists e_s$[see(x_{coyote})(e) & agent(ιz.boy(z))(e)]

However, given the present proposal for the meaning of anaphoric DPs, the meaning of the

10. I made use of event variables in Hanink (2016) for independent reasons not relevant here, though their use will become relevant again the discussion of so-called 'perception readings' in §3.5.1.

nominalizer comprises of both a definite article and an index layer. Following the syntax of nominalizations proposed in (11), the relative clause needs to compose first with the index and then with the definite article. Adopting the denotations used so far in (16), this can be achieved if the property-denoting index undergoes Predicate Modification with the now property-denoting relative clause (20a). The final step of composition is again ι-binding by D, resulting in the individual meaning shown in (20b).

(20) *Derivation of an IHRC (to be revised):*

a. Predicate Modification

[[*mé:hu gewe ʔí:giyiš*]]:

$\lambda x_e \exists e_s$[see(x_{coyote})(e) & agent(ιz.boy(z))(e) & x = g(*i*)]

b. ι-binding

[[*mé:hu gewe ʔí:giyišge*]]:

$\iota x_e \exists e_s$[see(x_{coyote})(e) & agent(ιz.boy(z))(e) & x = g(*i*)]

The compositional steps shown above still achieve the desired type for the relative clause: that of an individual. However, the meaning of the individual still contains a free variable: the one introduced by $[\![i]\!]$. This is problematic, because the referent denoted by the relative clause need not be anaphoric. This problem hearkens back to Hawkins's (1978) proposal that relative clauses must be cataphoric in some way, in order to license the definite article on the head noun even in cases when the referent it denotes is not familiar or anaphoric:

(21) a. A: What's wrong with Maria?

b. She was stood up by **the man** that she went out with yesterday.

Hawkins (1978: 131)

To remedy this problem in Washo, I build on an analysis of German relative clauses presented in Hanink & Grove (2017). Grove & Hanink (2016) and Hanink & Grove (2017) address the fact that the head noun of restrictive relative clauses in German requires the use of the strong form of

the definite article, despite the fact that it is not anaphoric (a problem pointed out, but not accounted for, by Schwarz (2009)). This is shown in (22):

(22) Fritz wohnt jetzt {**in dem**, #**im**} Haus, von dem er schon seit Jahren schwärmt.
Fritz lives now in the in+the house, from REL he already since years raves
'Fritz now lives in the house that he has been raving about for years.'

Hanink & Grove (2017: 241)

Hanink & Grove (2017) explain the use of the strong form in the external head by adopting the same structure of anaphoric DPs adopted here, from Hanink (2016). They resolve the issue of the non-anaphoric meaning of the relative clause by proposing that, while the matrix DP does in fact contain an index, the meaning of this index is that of a *binder* and not of a *bindee*. This analysis capitalizes on Heim's (1998) distinction between 'inner' and 'outer' indices: the former may be bound, while the latter may act as a binder.

Extending this account to Washo, I argue that the denotation of the 'binder' use of the index is as shown in (24). Following the semantic framework for binding in Sternefeld (1997, 2001); Kobele (2006, 2010); Kennedy (2014); Klecha & Martinović (2015) and Hanink & Grove (2017), the denotations below are endowed with assignment-function arguments, a feature which becomes necessary for the proposal that *i* compositionally binds elements in its scope. In what follows therefore, assignment functions are built into the model and do not parameterize the interpretation function. In particular, the following types are assumed:

(23) a. a is the type of assignment functions
b. e is the type of individuals
c. ⟨a, e⟩ is the type of functions from assignments to individuals
d. t is the type of truth values
e. ⟨a, t⟩ is the type of functions from assignments to truth values

Adopting this framework, the meaning of the matrix index within the DP on Hanink & Grove's

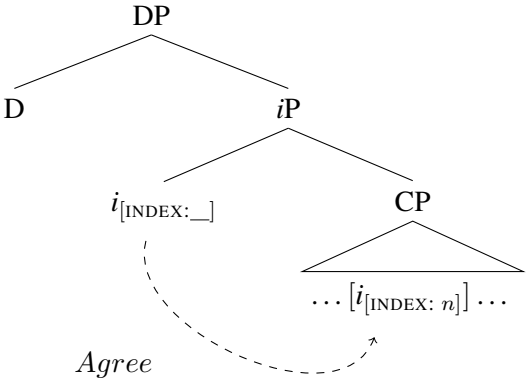
approach is the following:

(24) $[\![i_{[\text{INDEX}:n]}]\!]$: $\lambda\phi_{\langle a,t\rangle}\lambda \text{x}_{\langle a,e\rangle}\lambda \text{g}_a[\phi(\text{g}[\text{x}(\text{g})/n])]$ Hanink & Grove (2017: 245)

One important aspect of this analysis is that the matrix instance of *i* needs to 'know' which value of the index it needs to replace and bind. Otherwise, it will bind any open variable in the proposition it composes with. Hanink & Grove achieve this with an Agree relation that becomes active between the index in the matrix clause and the one in the embedded clause; I propose something similar for Washo. This type of approach supposes that indices are just another type of ϕ-feature that can participate in agreement (Browning 1987; Rezac 2004; Kennedy 2014).

Specifically, I propose that the value of the index in the matrix DP is valued by the index on the semantic head of the relative clause via Downward Agree (i.a. Chomsky 2000; Adger 2004) after that index agrees with subordinate C.

(25)



Adopting this meaning for the index-bearing head in the nominalizer results in the derivation in (26). In (26a), the embedded clause denotes a proposition with an open variable in the meaning of 'the coyote.' In (26b), the embedded clause composes with [[*i*]], which binds this open variable and returns a property. (Note that this analysis requires no movement of the relative clause's head. This is supported by the lack of island effects in relative clauses in Washo, which I return to in §3.6.1.) Finally, in (26c), the definite article ι-binds this property.

(26) *Derivation of an IHRC*:

a. embedded clause

[[*mé:hu gewe ʔí:giyiš*]]:

$\lambda g_a[\text{saw}(\iota y_e[\text{coyote}(y) \,\&\, y = g(i)])(\iota z_e[\text{boy}(z)])]$

b. binding by matrix *i*:

[[*mé:hu gewe ʔí:giyiš*]]:

$\lambda\phi_{\langle a,t\rangle}\lambda x_{\langle a,e\rangle}\lambda g_a[\phi(g[x(g)/i])]\ (\lambda g'[\text{saw}(\iota y_e[\text{coyote}(y) \,\&\, y = g'(i)])(\iota z_e[\text{boy}(z)])]\ ) =$

$\lambda x_{\langle a,e\rangle}\lambda g_a[\text{saw}(\iota y_e[\text{coyote}(y) \,\&\, y = g'(i)])(\iota z_e[\text{boy}(z)])]\ (g[x(g)/i])] =_\beta$

$\lambda x_{\langle a,e\rangle}\lambda g_a[\text{saw}(\iota y_e[\text{coyote}(y) \,\&\, y = x])(\iota z_e[\text{boy}(z)])]$

c. ι-binding

[[*mé:hu gewe ʔí:giyišge*]]:

$\iota x_{\langle a,e\rangle}\lambda g_a[\text{saw}(\iota y_e[\text{coyote}(y) \,\&\, y = x])(\iota z_e[\text{boy}(z)])]$

The meaning in (26c) achieves the desired result: the relative clause comes to denote the unique individual that the boy saw. This individual can then act as the object of the matrix verb, 'see.'

3.4.3 Washo and the indefiniteness restriction

I now turn to discuss the role of demonstrative structure in internally headed relatives in Washo with respect to the so-called 'indefiniteness restriction' that was briefly mentioned in §3.4.1. It has been widely demonstrated that internally headed relative clauses in many American languages display a restriction on the semantic head: it must be *indefinite* (Jelinek (1987); Williamson (1987) for Lakhota; Basilico (1996) for Digueño, Mojave, Mooré, and Northern Athabaskan). Unlike such languages however, Washo allows strong determiners to occur inside the semantic head in relative clauses. An example of one such determiner is the demonstrative *hádigi*, shown in (27):

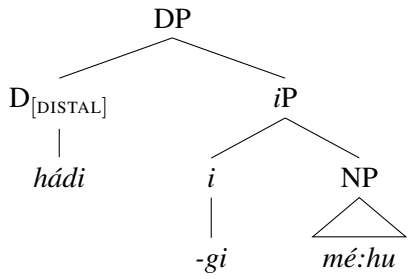
(27) [$_{DP}$ [$_{CP}$ Ló:t Ryan **hádigi mé:hu** ʔ-í:gi-yi-š]-gi] wáʔ ʔ-éʔ-i
yesterday Ryan that boy 3-see-IND-SR-NMLZ here 3-COP-IND
'That boy that Ryan saw yesterday is here.'

The motivation for the indefiniteness restriction from a semantic perspective is that only an indefinite head can supply a restricted variable that can bound by a relative operator higher up in the clause (Williamson 1987). Strong determiners such as the demonstrative in (27) are therefore ruled out because they do not leave a variable for the relative operator to bind.

The puzzle posed by the Washo data is therefore twofold. The first puzzle is what the interpretation of internally headed relatives that lack the indefiniteness restriction is, if their head does in fact lack a free variable. The second puzzle is what it is about Washo that allows it to obviate this restriction in the first place. I show that, given the present system, the lack of indefiniteness restriction in Washo follows naturally and does not involve the absence of variables.

Building on Hanink (2016), I propose that DPs in Washo host a bindable index along the lines of the type of proposal discussed at length in Chapter 2. The structure of DPs results in the interpretability of strong determiners, as they then introduce a free variable for the relative operator to bind. Following Elbourne's (2005, 2008) proposal that demonstratives likewise occur in DP structures containing an index layer, I propose the structure in (28) for *hádigi*, in which demonstratives are a special type of definite article featuring a [DISTAL] feature (see also King (2001); Roberts (2002); and Wolter (2006), and Alexiadou et al. (2007) for alternatives). I return to discuss the vocabulary entries that determine exponence of these heads in §3.6.2.

(28)



Motivation for the separation of the distal component of the demonstrative and *-gi* suffix comes from the paradigm for demonstratives in the language showing that *hádigi* is in fact morphologically decomposable. As the examples in (29) show, it consists of both a distal component *hádi?* (which can be contrasted with the proximal component *wídi?* in (29b)), and the same third person

pro-form *gí:* that we saw in the previous sections on independent pronouns and clausal nominalizations:[11]

(29) a. *Distal demonstrative*

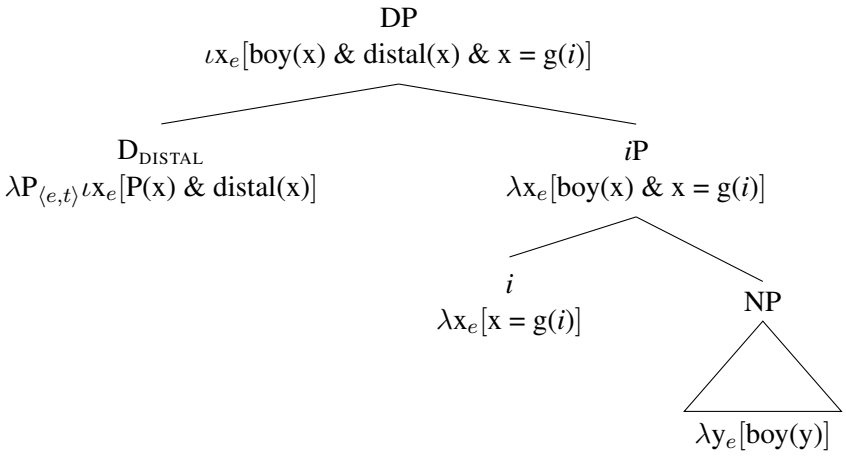
hádi-**gi** mé:hu
DIST-3.PRO boy
'that boy'

b. *Proximal demonstrative*

wídi-**gi** mé:hu
PROX-3.PRO boy
'this boy'

In Hanink (2016), I argued that the index in the structure in (28) provides the free variable that the internally headed relative needs in order for binding to be successful. Given this structure for demonstratives, the meaning of the semantic head of the internally headed relative in (27) is as follows in (30), in which the demonstrative denotes a distal feature encoded into the meaning of [$[D_{DISTAL}]$] (see also Elbourne (2005)).

(30)



Given that the meaning in (30) has a free variable available for binding, composition of an internally headed relative with a 'strong' head will proceed much in the same way as it does in

11. The pronoun never shows an alternation in case when used in the demonstrative, i.e. it only occurs in its nominative form. I return to this issue in §3.6.2

cases where the head is definite but lacks a demonstrative modifier §3.4.1. First, the embedded clause is formed, which denotes a proposition with an open variable (31a). Then, matrix *i* binds this free variable and returns a property (31b). Finally, the clausal nominalizer ι-binds this property, contributes the distal feature, and returns the desired result: an individual (31c).

(31) *Derivation of an IHRC with hádigi:*

a. embedded clause

[[*Ryan hádigi mé:hu ʔí:giyiš*]]:

$\lambda g_a[\text{saw}(\iota y_e[\text{boy}(y) \,\&\, x = g(i)])(\text{Ryan})]$

b. binding by matrix *i*

[[*Ryan hádigi mé:hu ʔí:giyiš*]]:

$\lambda\phi_{\langle a,t\rangle}\lambda x_{\langle a,e\rangle}\lambda g_a[\phi(g[x(g)/i])]\ (\lambda g'_a[\text{saw}(\iota y_e[\text{boy}(y) \,\&\, y = g'(i)])(\text{Ryan})]) =$

$\lambda x_{\langle a,e\rangle}\lambda g_a[(\lambda g'_a[\text{saw}(\iota x_e[\text{boy}(y) \,\&\, y = g'(i)])(\text{Ryan})])(g[x(g)/i])] =_\beta$

$\lambda x_{\langle a,e\rangle}\lambda g_a[\text{saw}(\iota x_e[\text{boy}(y) \,\&\, y = x])(\text{Ryan})]$

c. ι-binding

[[*Ryan hádigi mé:hu ʔí:giyišge*]]:

$\iota x_{\langle a,e\rangle}\lambda g_a[\text{saw}(\iota x_e[\text{boy}(y) \,\&\, y = x])(\text{Ryan})]$

The meaning of (31d) is correctly derived as the unique individual equivalent to the distal, unique boy that Ryan saw. This individual then serves as the subject of the matrix copula verb 'be,' just as in the cases in which no demonstrative is present.

This analysis proposes that the indefiniteness restriction is violable because demonstratives contain an index layer that allows strong determiners to occur in the semantic heads of internally headed relatives. This of course raises the question as to why the indefiniteness restriction should ever be observed, if such structurally-encoded indices are available. While I cannot give a concrete answer to this question, one possible explanation is that the structure of demonstratives and other strong determiners varies cross-linguistically; one point of variation might be the availability of the index in DP structure.

Importantly, I have shown in this section that the prediction that we should find morphological complexity in anaphoric definites is therefore born out in Washo: demonstratives give evidence for a structurally-hosted index. While we have already seen evidence for the complexity of anaphoric definites from the contraction facts in German, the Washo data support the analysis in two novel ways. First, we find evidence for an index layer in an isolate language unrelated to English and German; second, the order of morphemes I proposed for German correctly predicts the order of the morphemes within complex demonstratives in Washo. I return to this in §3.6.2.

3.5 *-gi/ge* in other clausal nominalizations

In this section, I show that the semantic role of the nominalizer in a variety of different types of nominalizations is to bind some variable in the embedded clause (Hanink 2016; Hanink & Bochnak 2017). Aside from internally headed relatives, such environments include event nominalizations and the complement clauses of factive verbs. This suggests that the nominalizer is not just a pronoun, but the realization of a more complex phrase involving the definite article.

3.5.1 Perception readings

Washo also makes use of clausal nominalizations to encode what I will refer to as 'perception constructions' (following Kim (2007), cited by Moulton (2017), cf. Hanink (2016), in which I referred to this type of construction as an 'event reading'). These clauses can be translated as *-ing* events in English, as shown in the examples in (32) and (33):

(32) [$_{DP}$ [$_{CP}$ t'é:liwhu ʔ-íšim-i-š]**-ge**] di-dámal-i
man 3-sing-IND-SR-NMLZ 1-hear-IND
'I heard the man's singing.' Washo Archive

(33) [$_{DP}$ [$_{CP}$ sísu ʔ-šéšim-aŋaw-i-š]**-ge**] di-dámal-gaʔlám-i
bird 3-sing.PL-well-IND-SR-NMLZ 1-hear-want-IND
'I like hearing the birds' good singing.'

Drawing a parallel to internally headed relatives, I argued in Hanink (2016) that the derivation of perception constructions of this kind likewise involves property-formation of the embedded clause as well as ι-binding by the nominalizer *-ge*. Unlike in internally headed relatives however, the variable that becomes bound in event nominalizations is the *event* variable (building on Toosarvandani's (2014) proposal for Northern Paiute), rather than an individual, consistent with claims that both individuals and events are of the same type (Elliott 2016).

The result of composition is shown in (34), which has the meaning of a unique singing event whose agent is some contextually salient man. The source of the property that is ι-bound by the definite article is the event itself: the event variable is not existentially closed, and as such remains a property that can then be ι-bound by the nominalizer. Given these steps, the object of the matrix verb 'hear' is then the unique individual event of the man's singing:

(34) [[*t'é:liwhu ʔíšɨmišge*]]:
$\iota e_s[\text{sing}(e) \,\&\, \text{agent}(\iota z.\text{man}(z))(e)]$

Note however once again that this analysis makes use of a different meaning for the nominalizer than I have adopted so far. Given the revised structure of nominalized clause, the embedded clause needs to compose with an index before it composes with the definite article. The revised derivation is given in (35):

(35) *Derivation of a perception reading*:

a. embedded clause
[[*t'é:liwhu ʔíšɨmiš*]]:
$\lambda e_s[\text{sing}(e) \,\&\, \text{agent}(\iota z.\text{man}(z))(e)]$

b. predicate modification with [[*i*]]:
[[*t'é:liwhu ʔíšɨmiš*]]^g:
$\lambda e_s[\text{sing}(e) \,\&\, \text{agent}(\iota z.\text{man}(z))(e) \,\&\, e = g(i)]$

c. ι-binding

[[*t'é:liwhu ʔíšɨmišge*]]^g:

ιe_s[sing(e) & agent(ιz.man(z))(e) & e = g(i)]

The meaning of the index here is the same as it is in the anaphoric use, rather than the binder meaning of the matrix index in internally headed relatives. I argue that this is the desired result: the purpose of the variable here is to refer back to an event either in the linguistic context or made available otherwise in the discourse. That is to say, unlike relative clauses, perception constructions do either refer back to an event, or they pick out an event in the context in the same way a demonstrative picks out an individual; they are infelicitous in out of the blue contexts. Consider the following:

(36) *Out of the blue*:

#I heard the man's singing.

In (37) on the other hand, the entire referent of 'the man's singing' refers back to the singing event.

(37) The man *sang*$_i$. I heard **the man's singing**$_i$.

For this reason, it is desirable to maintain an anaphoric meaning for the nominalized clause in the case of perception constructions.

3.5.2 Complements of factive verbs

The last type of clausal nominalization to be discussed is seen in the embedded complements of factive verbs. As in many languages (Kiparsky & Kiparsky 1970), Washo differentiates between the complements of factive and non-factive verbs (Hanink & Bochnak 2018). While I do not discuss the complements of non-factive verbs here, the complements of factive verbs always come in the form of a nominalized clause. Examples of this are shown in (38) and (39) in the nominalized

clauses embedded by the factive verbs ‘know’ and ‘see,’ respectively:[12]

(38) [$_{DP}$ [$_{CP}$ Emily t’-íšim-aŋaw k’-éʔ-i-š]**-ge**] l-ašaš-é:s-šemu-yi
Emily NMLZ-sing-well 3-be-IND-SR-NMLZ 1-not.know-NEG-really-IND
‘I really know that Emily is a good singer.’
Hanink & Bochnak (2018: 67)

(39) di-tugí:b-eweʔ-i-š-da [$_{DP}$ [$_{CP}$ ∅-há:biʔ-i-š]-**ge**] l-í:gi-yi
1-look.around-hence-IND-SR-NMLZ 3-rain-IND-SR-NMLZ 1-see-IND
‘I looked around outside and I saw that it rained.’
Hanink & Bochnak (2018: 67)

We argued in Hanink & Bochnak (2018) that the role of the nominalizer in this environment is to bind the property expressed by the embedded preposition, adopting the property-theory of embedded clauses – according to which attitude predicates likewise denote properties (of events or states; Kratzer 2006; Moulton 2009, 2015; Elliott 2016) and do not encode their complements directly (cf. Hintikka 1969). In this approach, the meaning of the verb ‘know’ is simply a property of events, as shown in (40):

(40) $[\![know]\!]^w$: $\lambda_s[\text{believe}_w(s)]$

In this type of analysis, what is ‘known’ in the example in (38) is the individual ‘fact’ in the world that ‘Emily is a good singer.’ Hanink & Bochnak likewise build on Kastner’s (2015) account of factive complements, according to which the D layer in such clauses is what makes them factive to begin with, by contributing a presupposition of familarity in the Heimian sense (Heim 1982). Clausal complements to non-factive verbs, on the other hand, lack a D-layer and therefore also lack any presupposition of familiarity.

Crucial to this type of analysis is that the embedded proposition must first become property-denoting, before it can be ι-bound by the nominalizer. A key insight to this effect comes from Moulton (2009, 2015), who argues that *that*-clauses don’t directly denote propositions, but rather

12. The example in (i) makes uses of a different nominalizer, *-da*, which I do not discuss here. On its own, this morpheme means ‘there.’

sets of individuals whose content expresses a certain proposition. This meaning can be achieved if the embedded proposition composes with a function head, which Moulton terms F_{PROP}, which is a function that takes a proposition and returns the set of individuals whose content denotes that proposition:

(41) **F_{PROP}**

$\lambda P_{\langle s,t\rangle} \lambda x_e [\text{CONT}(x) = P]$ Moulton (2015: 312)

Adopting these core assumptions from Hanink & Bochnak (2018), along with the new proposal that the nominalizer consists of both a D and index layer, composition of the embedded proposition proceeds as shown in (42). (42a) gives the propositional meaning of the embedded clause. (42b) shows composition with F_{PROP}, which returns a characteristic function of individuals whose content is specified as the meaning of the proposition that 'Emily is a good singer.'[13] The next step is for the embedded proposition to undergo predicate modification with the property-denoting index layer in the matrix clause (42c). This complex property can then be ι-bound by the D layer as shown in (42d).

(42) *Derivation of an embedded clause of a factive verb*:

a. Embedded clause:

[[*Emily t'íšɨmaŋaw k'é?*]]:

$\lambda w'$[Emily is a good singer$'_w$]

b. [[F_{PROP}]] ($\lambda w'$[Emily is a good singer$'_w$]):

[[*Emily t'íšɨmaŋaw k'é?*]]:

λx_e[$\text{CONT}_w(x) = \lambda w'_s$[Emily is a good singer$'_w$]

c. predicate modification with [[*i*]]:

[[*Emily t'íšɨmaŋaw k'é?*]]:

λx_e[$\text{CONT}_w(x) = \lambda w'_s$[Emily is a good singer$'_w$] & x = g(*i*)]

13. Hanink & Bochnak (2018) implement F_{PROP} as a type-shift, but this is a minor adjustment not relevant here.

d. ι-binding:

[[*Emily t'íšɨmaŋaw k'é?išge*]]:

$\iota x_e[\text{CONT}_w(x) = \lambda w'_s[\text{Emily is a good singer}'_w] \ \& \ x = g(i)]$

The derivation in (42) produces an individual argument that can be selected for by the matrix verb 'know,' resulting in the following meaning for the entire sentence:

(43) $\exists s[\text{knowing}_w(s) \ \& \ \text{HOLDER}_w(s) = \text{speaker} \ \& \ \text{THEME}_w(s) = \iota x_e[\text{CONT}_w(x) = \lambda w'[\text{Emily is a good singer}_{w'}] \ \& \ x = g(i)]]$

The role of the anaphoric index in the selected complements of factive verbs is less straightforward than it is in the case of the perception construction discussed in the last section. The problem of encoding factivity with a definite semantics is essentially that it is not clear what the definite is picking out; if it is picking out a proposition already established in the common ground, then it is unclear which aspect the meaning of an example like (43) ensures that the content of the proposition is *true* (as opposed to, say, a rumor).

I would like to suggest however that the role of the anaphoric variable is to pick out some fact that has been previously established in the discourse. Another alternative is to assume a functional head in the syntax, FACT, which takes a proposition and returns a proposition specified as true, as proposed by Elbourne (2013). In this type of account, the open variable in the embedded clause could then be bound by the index in the nominalizer, just as it is in internally headed relatives. I leave an explicit account of this problem to future research.

To summarize before moving on, the data from the past section have provided evidence that the nominalizer is structurally equivalent across all its uses: it does not have the meaning of a type e pronoun, but is representative of an underlying definite and anaphoric semantics contributed by both a D and *i* layer, respectively.

3.6 Washo pronouns and disguised definite descriptions

In this section, I turn to discuss the structure of definite descriptions in Washo, given the facts from clausal nominalizations and complex demonstratives presented above. I begin the discussion with complex demonstratives in Washo, and then move on to show how this structure explains a puzzle posed by the presence of strong determiners in internally headed relatives in language. I conclude the section with a morphological analysis of pronouns and other definite descriptions in Washo.

3.6.1 Washo: a DP or an NP language?

While I have shown in the last section that the nominalizer *-gi/ge* contributes a definite semantics more complex than that of a pronoun, Washo is a language without any overt exponence of a definite article. In this section I show that there is nevertheless positive evidence for the presence of a D-layer in Washo based on two correlations from Bošković's (2008) work on DP vs. NP languages. In this work, Bošković identifies a variety of properties that seem to correlate with the presence or an absence of a definite article. While not all of these properties are directly testable in Washo, two of them are.[14] Improved understanding of these tests requires more fieldwork The first property is what I will refer to as *locality* (44):

(44) **Locality**

Internally headed relatives are island sensitive in languages without, but not with articles.

The second property is what I will refer to as *restrictiveness*:

(45) **Restrictiveness**

Internally headed relatives are restrictive in languages with, but not in those without articles.

14. This has to do mainly with the word order of the language and lack of access to certain types of constructions, e.g. superiority effects in multiple *wh*-fronting, as Washo is a *wh*-in-situ language.

I first discuss the relevance of the locality property. Testing island sensitivity against this correlation suggests that Washo is a DP language: Washo lacks island sensitivity. This can be seen in the example in (46):

(46) [$_{DP}$ [$_{CP}$ [$_{DP}$ [$_{CP}$ **daʔmóʔmoʔ** *díːmeʔ* ∅-súːbiʔ-i-š]-ge] di-súːdɨm-i-š]-ge]
woman water 3-bring-IND-SR-NMLZ 1-look.at-IND-SR-NMLZ

Adele gíː-saʔ ʔ-íːmeʔ-ašaʔ-i
Adele 3.PRO-also 3-drink-INT.FUT-IND

'Adele will drink the water the woman I am looking at who brought.'

In (46), the head of the most deeply embedded clause is in bold (*daʔmóʔ*moʔ), while the head of the intermediate clause is in italics (*díːmeʔ*). It is crucial in this example that the object the speaker is looking at is the woman, while the object that Adele will also drink is the water. In a similar example, the head of the most embedded relative clause is *people* while the head of the higher relative clause is *food*:

(47) [$_{DP}$ [$_{CP}$ [$_{DP}$ [$_{CP}$ **t'ánu** *démlu* ∅-súːbiʔ-i-š]-ge] di-súːdɨm-i-š]-ge]
people food 3-bring-IND-SR-NMLZ 1-look.at-IND-SR-NMLZ

∅-wayúʔuš-aŋaw-i
3-smell-good-IND

'The food the people I'm looking at who brought smells good.'

Such examples as in (46) and (47) would constitute relative clause island violations in a language that obeys islands; internally headed relatives in Washo therefore seem not to display island sensitivity, a property of languages with a definite article.

The second property associated with the presence or lack of a definite article in a given language is concerned with whether relative clauses in a given language are restrictive or non-restrictive. There are two types of data showing that relative clauses in Washo are resrictive, as supported by generalizations discovered by Grosu & Landman (1998). The first is that restrictive relatives are known to give rise to both definite and existential interpretations. We have already seen a variety

of definite readings, for example (48), repeated from (6) above:

(48) [$_{DP}$ [$_{CP}$ mé:hu **géwe** ʔ-í:gi-yi-š]-ge] lé:-saʔ l-í:gi-yi
boy coyote 3-see-IND-SR-NMLZ 1-also 1-see-IND
'I also saw the coyote that the boy saw.'

However, an existential interpretation is in fact also possible, as seen in the following example, in which the heron is a novel referent introduced into the story:

(49) [$_{DP}$ [$_{CP}$ **k'ák'aʔ** dá: ∅-gé:gel-i-š]-ge] daʔmóʔmoʔ ∅-yá:m-aʔ
heron there 3-sit-IND-SR-NMLZ woman 3-speak-DEP
'The woman spoke to **a heron** who was sitting there.'

Bear and Deer Story, Washo tribe

While both relative clauses in (48) and (49) are nominalized by the same suffix, we observe the potential for either an indefinite or definite reading.

Another diagnostic for restrictiveness discussed by Grosu & Landman (1998) is the ability to stack. This is also possible in internally headed relatives in Washo, as shown in (50).

(50) [$_{DP}$ [$_{CP}$ [$_{DP}$ [$_{CP}$ t'é:liwhu baŋáya ʔ-éʔ-i-š]**-ge**] daʔmóʔmoʔ bóŋi-yi-š]**-ge**]
man outside 3-COP-SR-NMLZ woman call-IND-SR-NMLZ
l-í:gi-ay-ig-i
1-see-INT.PST-PAST-IND
'I saw the woman who called the man who was outside.'

In (50), the two properties denoted by the embedded relative clauses intersect in meaning, giving rise to a restrictive interpretation. Note moreover how the analysis of relative clauses above helps us explain the stackability observed in Washo. Consider the following example:

(51) [$_{DP}$ [$_{CP}$ [$_{DP}$ [$_{CP}$ mé:hu baŋáya ʔ-éʔ-i-š]**-ge**] Alan ∅-bóŋi-yi-š]**-gi**]
boy outside 3-COP-SR-NMLZ Alan 3-call-IND-SR-NMLZ

∅-p'á:š-ug-e:s-i
3-enter-hither-NEG-IND

'The boy that was outside that Alan called didn't come in.' Hanink (2016: 130)

In (51), we again have a case of stacked relative clauses. According to the proposal from §3.4, the denotation for the most deeply embedded clause, 'the boy who was outside,' is as follows in (52):

(52) [[*mé:hu baŋáya ʔéʔišge*]]: $\iota x_{\langle a,e\rangle} \lambda g_a$[be-outside($\iota y_e$[boy(y) & y = x])]

The meaning of the index that arrives at the meaning of (52) is the binder meaning of *i*. However, the index can also take on its anaphoric, bindee, meaning instead, resulting in the following:[15]

(53) [[*mé:hu baŋáya ʔéʔišge*]]: $\iota x_{\langle a,e\rangle} \lambda g_a$[be-outside($\iota y_e$[boy(y) & y = g(*i*)])]

Crucially, the denotation in (53) contains a free variable that has yet to be bound. This makes it possible for the entire relative clause to serve as the head of the relative clause that contains it:

(54) *Derivation of stacked IHRCs*:

a. deepest relative clause

[[*mé:hu baŋáya ʔéʔišge Alan bóŋiyiš*]]:

λg_a[call($\iota z_{\langle a,e\rangle} \lambda g_a$[be-outside($\iota z_e$[boy(z) & z = g(*i*)])]) (Alan)]

b. binding by matrix *i*:

[[*mé:hu baŋáya ʔéʔišge Alan bóŋiyiš*]]:

$\lambda\phi_{\langle a,t\rangle} \lambda x_{\langle a,e\rangle} \lambda g_a[\phi(g[x(g)/i])]$([[*mé:hu baŋáya ʔéʔišge Alan bóŋiyiš*]]) =

$\lambda x_{\langle a,e\rangle} \lambda g_a$([[*mé:hu baŋáya ʔéʔišge Alan bóŋiyiš*]])(g[x(g)/*i*])] $=_\beta$

$\lambda x_{\langle a,e\rangle} \lambda g_a$[call($\iota z_{\langle a,e\rangle} \lambda g_a$[be-outside($\iota z_e$[boy(z) & z = x])]) (Alan)]

15. This would require either a stacked index layer in the DP, which is not ruled out by the present analysis, or the lack of a free variable in the semantic head of the most deeply embedded relative clause.

c. ι-binding

[[*mé:hu baŋáya ʔéʔišge Alan bóŋiyišgi*]]:

$\iota x_e \lambda g_a$[call($\iota z_{\langle a,e \rangle} \lambda g_a$[be-outside($\iota z_e$[boy(z) & z = x])]) (Alan)]

The result of (54) is the unique individual boy who was outside, who is the theme of the calling event whose agent is Alan. This entire individual then serves as the subject of the matrix verb, 'come in.'

In sum, there is evidence that Washo does in fact have a D layer – despite any overt realization of a definite article in the language – based on two correlations observed in the literature. The first is that only languages with a definite article display island insensitivity in internally headed relatives, the second is that only languages with a definite article make use of restrictive relatives. Both of these characteristics are observable in Washo. Further evidence from stacking also lends evidence to the presence of an index layer in the structure of the Washo DP.

3.6.2 Structure of the Washo DP

In this section I propose an analysis for the structure of definite descriptions in Washo. To do so, I build on claims that pronouns and definite determiners are essentially allomorphs of one another (Postal 1966; Lyons 1999; Elbourne 2005; Roelofsen 2008; Johnson 2012), though I pursue a slightly different route. Initial evidence for this type of proposal comes from Postal (1966), who argues that pronouns are in fact a type of definite determiner by citing examples such as the following (see also Elbourne 2005):

(55) We Americans distrust you Europeans.

The idea is that such examples show that pronouns can, in fact, take nominal restrictions (and are not simply used appositively in cases such as (55)). Elbourne (2005) proposes that pronouns are in fact definite descriptions in disguise, and proposes the following structure for definite articles, in which D takes not only a nominal complement, but also an index as one of its argument:

(56) *Structure of a definite article*:

[the *i* [NP]] Elbourne (2005: 157)

The index is present in definite descriptions as well as pronouns for two reasons: i) pronouns and definite determiners share a single syntax, and ii) both expressions may be bound. Pronouns then, under this view, are simply a different form of the definite article, as reflected in the structure in (57):

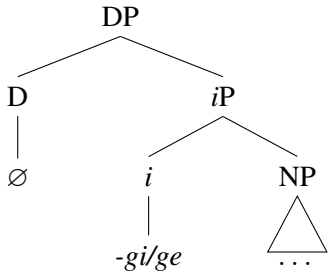
(57) *Structure of a pronoun*:

[it *i* [NP]] Elbourne (2005: 157)

Pronouns differ in just one respect from their more articulated counterparts: they lack a nominal restriction. Various authors have explained this in two main ways, proposing either NP-deletion on a par with VP ellipsis, establishing identity with some antecedent (Elbourne 2005), or that contextual information supplies the relevant information for the missing predicate (Roelofsen 2008).

I extend this type of approach to the Washo data by proposing that the pronominal form *-gi/ge* is in fact the spell out of both the *i* layer in the Washo DP. This explains among other things why it has the semantics of a definite article when used in clausal nominalizations. I propose that, just as in German, the *i*P intervenes between the DP and NP in Washo. Unique to Washo, however, is the fact that *i* is overtly exponed, as shown in (58):

(58)



This means that *-gi/ge* is not simply a third person pronoun, but a definite description in disguise in a different sense than the one intended by the above authors: it is not an alternate spell out of D,

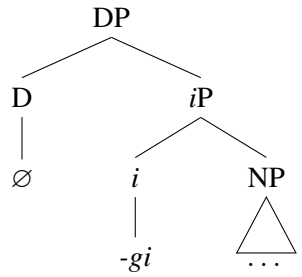
but a spell out of the index-layer in a DP headed by a null definite article.

Recall that we see *-gi/ge* used in three different environments: i) in independent form; ii) in complex demonstratives; and iii) in clausal nominalizations. I now give the structure for each of these uses, starting with the independent use in (59), repeated from (2):

(59) *Independent use*

a. **gí:** pélew ʔ-íʔw-i
3.PRO jackrabbit 3-eat-IND
'He's eating the jackrabbit.'

b.

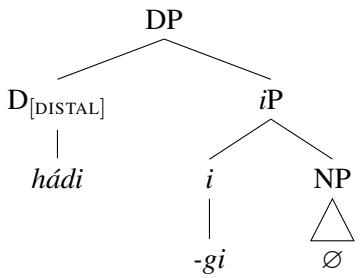


In (59), there is no nominal restriction, and the pronoun refers to the subject of the sentence. The second environment where we see *-gi/ge* is in complex demonstratives, as in (60):

(60) *Complex demonstratives*

a. **hádi-gi** **sísu** di-gaʔlám-i
DIST-3.PRO bird 1-like-IND
'I like that bird.'

b.



Demonstratives are therefore a special kind of D, whose form *hádi* is conditioned by the

[DISTAL] feature it bears, which I return to in the proposal for vocabulary entries governing the DP below.

Note that the nominal complement in (60) is null. This is due to the observation that demonstratives generally display appositive-like behavior in the language, and so I do not treat them as occupying the same DP as the noun they modify. This appositive behavior can be seen in the case of *-gi/ge* on its own, as well. For example, in (61), the pronoun is used in apposition to *pélew* ('rabbit'):

(61) gí: pélew l-áŋal-a ∅-gé:gel-i
3.PRO rabbit 1-house-LOC 3-sit-IND
'It, the rabbit is sitting at my house.'

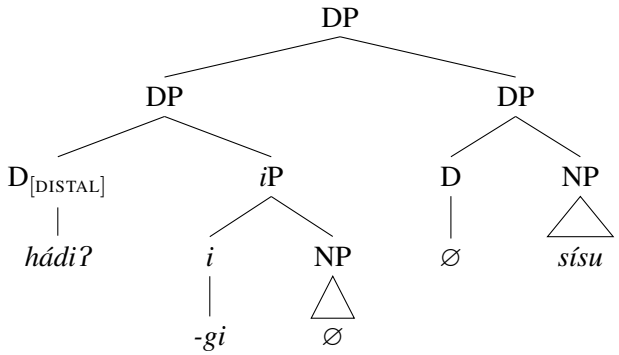
Additionally, the order of the demonstrative is flexible, as shown in (62):

(62) a. hádi-gi láka? di-ga:lám-i
that-3.PRO one 1-like-IND
'I like that one.'

b. láka? hádi-gi di-ga:lám-i
one that-3.PRO 1-like-IND
'I like that one.'

I therefore propose the structure in (63):

(63)



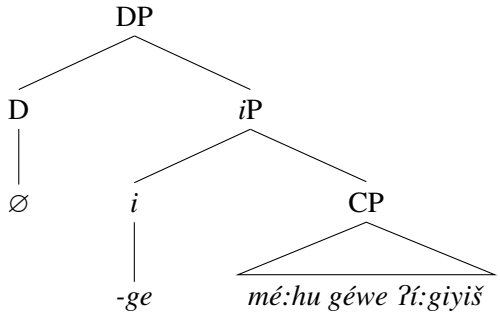
I note here that the pronoun never shows an alternation in case when used in the demonstrative,

i.e. it only occurs in its nominative form. I propose that the reason for this is that the intervening head D, in this case, *hádi*, receives the case value instead (though itself is an invariant form). When this head does not intervene, i.e. in all other cases in which *-gi/ge* is overt, this morpheme does receive case and therefore displays the observed nominative/non-nominative alternation.

Finally, we see *-gi/ge* in nominalized clauses, as in (64) (repeated from (6)):

(64) a. [$_{DP}$ [$_{CP}$ mé:hu géwe ʔ-í:gi-yi-š]**-ge**] lé:-saʔ l-í:gi-yi
boy coyote 3-see-IND-SR-NMLZ 1-also 1-see-IND
'I also saw the coyote that the boy saw.'

b.



In the case of clausal nominalizations such as in (64), an additional step of lowering to the C head in the embedded clause will achieve the correct morpheme order.

From a morphological perspective, the generalizations that emerge from this set of data are the following: D is generally zero in the language, aside from demonstratives, and *i* is exponed just in case it lacks a nominal complement with phonological features. I therefore propose the following vocabulary entries in (65) within the late-insertion framework of Distributed Morphology (Halle & Marantz 1993). The elsewhere form for the determiner in Washo is ∅ (65a), while D is exponed in the case of the demonstrative (65b-c).

(65) *Vocabulary entries for D*

a. [D] → ∅

b. [D DISTAL] ↔ *hádi*

c. [D PROXIMAL] ↔ *wídi*

The elsewhere form of *i* is *-gi* (66a), which surfaces as *-ge* when it bears a dependent case feature (66b). The rule in (66c) ensures that *i* null when followed by an overt nominal restriction.

(66) *Vocabulary entries for i*

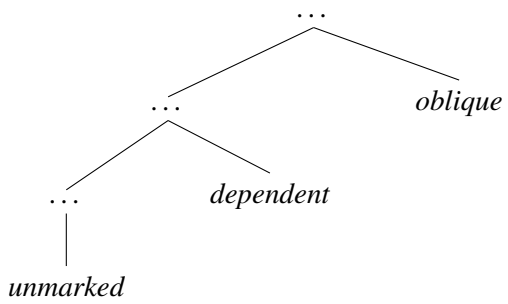
a. $[i] \leftrightarrow gi$

b. $[i\ \text{DEP}] \leftrightarrow ge$

c. $[i] \leftrightarrow \varnothing$/__NP

The presence of the dependent case feature in the entry in (66b) builds on the assumption that case features are hierarchical, with more complex cases being built out of simpler ones (i.a. Caha 2009; Smith et al. 2018). For example, Smith et al. (2018) propose the following structure, according to which the nominative is unmarked and at the bottom of the hierarchy, and is contained in the structures for dependent (accusative) and oblique (e.g. dative, genitive) case (p. 11):

(67)



Adopting this case geometry, the feature DEP in the rule in (66b) will ensure that every non-nominative instance of *i* will spell out as *-ge*, rather than *-gi*.

Additionally, to rule out cases of the rule in (66c) applying in cases where the nominal complement of *i* is null, I propose (following Elbourne 2005) that cases in which the noun is not prononunced are instances of nominal ellipsis, and as such *i* will bear an E-feature that triggers deletion of its complement in that environment. An alternative way of blocking (66c) in such cases is to define the rule so that it only applies when the noun contains phonological features of any kind, foregoing the ellipsis solution.

In the next section, I move on from the discussion of anaphoric definites in Washo to discuss the contribution that Washo makes to understanding the other type of anaphora we saw in the last chapter: anaphora with the modifier *same*.

3.7 Sameness and gradability in Washo

The claim that *same* is a degree head predicts that languages that lack degree constructions should not lexicalize this word. We can also test this prediction with Washo, a language which has been argued to lack functional degree morphology (Bochnak 2013, 2015). I show that the present proposal in fact makes the right prediction: there is no dedicated word for *same* in the language.

3.7.1 Gradable expressions in Washo

Functional degree morphology can be defined as morphology that "targets degree variables encoded in gradable adjective meanings." (Bochnak 2013: 50). As Bochnak shows, Washo does not lexicalize degree arguments and therefore lacks precisely the morphological elements that would reflect them on the surface (Bochnak 2013). Below, I summarize Bochnak's findings on degree expressions in Washo by giving examples from comparatives, superlatives, and equatives. He also shows that Washo lacks degree modifiers and measure phrases, but I do not discuss these here.

To express comparison, Washo makes use of the 'conjoined comparison' strategy (Bochnak 2013). Rather than using morphology such as English *more* or *-er*, Washo places two clauses in opposition to one another, as shown in (68):

(68) [t'éliwhu de-ʔil-káykay-iʔ-i k'-éʔ-i] [šáwlamhu de-ʔil-káykay-iʔ-é:s
man NMLZ-ATTR-tall-ATTR 3-COP-IND girl NMLZ-ATTR-tall-ATTR-NEG

k'-áʔ-a-š]
3-COP-DEP-SR

'The man is taller than the girl.'

Literally: 'The man is tall, while the girl is not tall.' Bochnak (2013: 155)

Similarly, superlatives are also formed with the bi-clausal strategy (cf. English *most*; *-est*), as shown in (69).

(69) [di-ŋám ʔil-káykay-iʔ-i] [míʔleʔ-w ʔil-káykay-iʔ-é:s-i]
1.son ATTR-tall-ATTR-IND all-PL ATTR-tall-ATTR-NEG-IND
'My son is the tallest.'
Literally: 'My son is tall, everyone is not tall.' Bochnak (2013: 215)

Finally, equatives are formed with the postposition *háka* ('with'), cf. English *as*:

(70) t'é:liwhu-hák'a šáwlamhu t'é:k'eʔ we-wgíʔiš-iʔ-i
man-with girl much STATIC-measure-ATTR-IND
'The girl is as heavy as the man.'
Literally: 'The girl weighs big.amount with the man.' Bochnak (2013: 214)

From this type of data, Bochnak (2013, 2015) concludes that adjectives in Washo do not encode degree arguments, but are instead makes use of vague predicates that give rise to gradable-like meanings through implicature.

3.7.2 Sameness in Washo

I now turn to discuss the implications of Bochnak's work for my proposal that *same* is a degree head. Washo express *sameness* in different ways. The attempt to arrive at the meaning of English 'same' in fieldwork yields two options in the language:[16] The most common translation offered for *same* is the demonstrative *hák'iɲt'éʔ*. An example using this demonstrative is shown in (71):

(71) Adele *dílek*$_i$ ʔ-í:gi-ya-š dílek **hák'-iŋ-t'éʔ**$_i$ l-í:gi-yi
Adele duck 3-see-DEP-SR duck that-REST-kind 1-see-IND
'Adele saw a duck, I saw the same duck.'

16. While Washo is generally a head-final language, there is free word order observed within the (neturally head-inital DP.

The demonstrative *hák'iŋt'éʔ* is morphologically decomposable into three parts: the demonstrative *hák'* 'that', the restrictive suffix *ŋ* meaning something like 'only', and the word *t'eʔ* 'kind', therefore meaning perhaps something more literally like 'that single kind.'[17] The differences between the demonstratives *hádi(gi)* and *hák'* are not yet entirely understood, though preliminary evidence suggests that *hák'* is a bound morpheme and may not occur on its own in the same way that *hádi(gi)* can. Related uses of this demonstrative in its bound form are shown in (72) and (73):[18]

(72) ʔ-liʔlíʔl-iʔ **hák'-té:š** yá: t'elí:liw-a-š
ATTR–old.REDUP-ATTR that-time yeah men-DEP-SR
'Yeah, at that time there were old men.' Two Floods Story, Washo Tribe

(73) ʔúŋa ʔ-éʔ-i-š démlu **hak'-téʔ** ʔýu-hel-i-giʔ
why 3-COP-IND-SR food that-kind eat
'Why are you eating that food?' Washo Archive

Notably however, we can see that *hák'iŋt'éʔ* differs from English *same* in that its meaning is underspecified, and may also mean something along the lines of 'similar,' as shown in (74):

(74) Adele *mé:hu*$_i$ ʔ-í:gi-yaʔ udi-š lé:-saʔ **hák'-iŋ-t'éʔ** **mé:hu**$_i$ l-í:gi-yi
Adele boy 3-see-DEP SEQ-SR 1-also that-REST-kind boy 1-see-IND
Elicited: 'Adele saw a boy and then I saw the same boy.'

Speaker's comment: 'Say, if I saw a boy and then you saw one wearing similar clothing or with similar glasses.'

Another possible meaning contributed of this modifier can be translated into English as 'alike':[19]

(75) míʔleʔ-w **hák'-iŋ-t'éʔ** k'-éʔ-i-š-ge-duŋ M-í:ki-yi
all-HUM that-REST-kind 3-COP-IND-SR-NMLZ-like INTR-look-IND
Elicited: 'They all look alike.'

17. *t'éʔ* can in fact be further decomposed into a nominalizer and copula, on a par with 'being' (Bochnak et al. 2011).

18. Washo uses reduplication on human nouns to express plurality, see Yu (2005).

19. The structure here involves the similative suffix *-duŋ* attaching to a nominalized clause.

Turning to cases in which two objects are equated outside of anaphoric contexts, I present first the example in (76), which makes use of a verbal strategy:[20]

(76) mé:hu šáwlamhu **hák'-aŋ-téši?** ʔ-ugális-i
boy girl that-REST-amount 3-year-IND
Elicited: 'The boy and the girl are the same age.'
More literally: 'The boy and girl are in/have years of that single amount.'

Second, I present cases that look like *as*-relatives, as in (77):

(77) [Adele-hak'á] **dewp'ápɨl hák'iŋ-t'e?** lé:-ši di-gaʔlá:m-i
Adele-with flower that-REST-kind 1-DU 1-like-IND
'I like the same flower as Adele.'

While at first glance it may appear that examples such as (77) make use of what looks to be an *as*-relative, perhaps indicative of the type of alternation discussed in Chapter 2, this appearance is misleading. The clue to this is the dual morphology observed in the pronoun *léši*. While verbs in Washo do not generally inflect for number, the pronominal morphology reveals that the subject of the verb refers to both the speaker and Adele, and not just to the speaker as would be expected if the structure were on a par with an *as*-relative. This can be explained by the fact that the postposition *hak'a* can be used as a conjunction, as shown in the example in (78):

(78) ʔuŋábi**-haká** demubá:bɨl
salt-with pepper
'salt and pepper' Bochnak (2013: 215)

This means that a more appropriate translation for (77) is in fact something along the lines of the following:

20. There is variation in the choice of epenthetic vowel between the demonstrative *hák'* and the restrictive suffix *-ŋ*. For some speakers it is [*i*], for others it is [a].

(79) Adele-hak'á dewp'ápɨl hák'iŋ-t'eʔ lé:-ši di-gaʔlá:m-i
Adele-with flower that-REST-kind 1-DU 1-like-IND
'Adele and I, we both like the same flower.'

Turning towards an account of *hák'iŋt'éʔ*, I propose that it should be treated as a demonstrative modifier on a par with an appositive. This means that the translation above for (71) is more accurately the following:

(80) Adele *dílek*$_i$ ʔ-í:gi-ya-š **dílek hák'-iŋ-t'éʔ**$_i$ l-í:gi-yi
Adele duck 3-see-DEP-SR duck that-REST-kind 1-see-IND
'Adele saw a duck, I saw the duck, that single kind.'

Compare this type of translation to another way of expressing property equation in the language, shown in (81):

(81) Adele **héši-ŋ dawdáŋa** L-éʔ-i
Adele size-REST height 1.UN-COP-IND
Elicited: 'I am as tall as Adele.' or 'I am the same height as Adele.'

In (81), we see another form of apposition. Both *héši-ŋ* and *dawdáŋa* are nominals, and are possessed by Adele (the possessive prefix in this case is null, Jacobsen (1964)). Again here, a more apt translation might therefore be:

(82) Adele **héši-ŋ dawdáŋa** L-éʔ-i
Adele size-REST height 1.UN-COP-IND
'I am Adele's height, just Adele's size.'

Aside from the use of a demonstrative, the other prevalent option to express sameness comes from the word *lák'aŋ*, which consists of the numeral *lák'aʔ* 'one' and, again here, the restrictive suffix *ŋ* meaning 'only'. Examples of this use are shown in (83) and (84):[21]

21. This is a common form of predication in the language expressing possession.

(83) šawáwlamhu míʔle-ši **lák'a-ŋ** da-láʔ-i k'-éʔ-i
girl.REDUP all-DU one-REST NMLZ-mother-ATTR 3.UN-COP-IND
'The two girls have the same mother.'

More literally: 'Both girls' single mother exists.'

(84) Adele-hak'á dewdíʔiš **lák'a-ŋ** lé:-ši l-í:gi-yi
Adele-with tree one-REST 1-DU 1-see-IND
Elicited: 'I saw the same tree as Adele.'

More literally: 'Adele and I saw just one tree.'

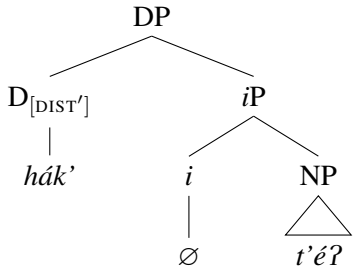
Note again the dual morphology on the pronoun *léši* in (84), indicative of a coordinated structure.

Finally, before moving on I note that non-identity can be expressed by negating the demonstrative use of *hák'iŋt'éʔ* to arrive at a word on a par with 'different.' In (85), the negated form *hák'iŋé:st'éʔ* can mean either 'different [flowers] from each other' or 'various.'

(85) Adele-hak'á dewp'ápɨl **hák'iŋ-é:s-t'éʔ** lé:-ši di-gaʔlá:m-i
Adele-with flower same-NEG-kind 1-DU 1-like-IND
'Adele and I both like different/various flowers.'

I assign *hák'iŋt'éʔ* the following structure, in which the word for 'kind' occupies the nominal complement of the null index:

(86)



To summarize, there is no dedicated degree morphology for *same* in Washo. Crucially, the proposal presented in Chapter 2 predicts this lexical gap: In the case of English, we saw that *same* is polysemous between a gradable and non-gradable use. I argued that this is because languages may co-opt a degree syntax for individuals by piggy-backing on degree structure. Washo however

does not have this option, since it lacks a degree semantics and functional degree morphology to begin with. The significance of this for my proposal is that the lexical gap in Washo is not an accident, but is predicted.[22] This result reinforces the importance of treating *same* as a degree head, rather than an adjective. The treatment of *same* as an adjective cannot relate the lexical gap in Washo to the lack of degree expressions more generally in the language.

3.8 Conclusion

In this chapter, I have shown that the structure of definites in Washo houses a structurally-encoded index. I have given evidence for this based on the behavior of the element *gi/ge* in Washo, which occurs in a variety of environments and which is best treated as part of a hidden definite description, whose index it expones. Importantly, the data from Washo show that the ability of definite descriptions to encode anaphora is structural, and may vary: Washo lends evidence to the claim that anaphora with and without *same* arise from different underlying structures, in that it makes use of anaphora with structurally-encoded indices, but does not use any type of anaphora with a lexical item meaning *same*. The lack of *same* lends evidence to the treatment of *same* as a degree head, and is consistent with the lack of degree expressions elsewhere in Washo.

From a broader perspective, this section has also shown that comparison at the syntax-semantics and syntax-morphology interfaces gives us a better view of the landscape of anaphora and equation, helping to identify similarities and differences across languages. It has also shown that the relationship between individual and degree equation is closer than we might have thought, and that careful cross-linguistic comparison and fieldwork on lesser-studied languages such as Washo allows us to test and lend evidence to linguistic theories, even in the face of negative evidence.

22. Washo also lacks a word for *such*. Elicitation results, e.g., in the use of the similative suffix along with the word for 'kind', as in (i):

(i) hádi-duŋ téʔ sísu di-galám-i
that-SIM kind bird 1-like-IND
Elicited: 'I like such birds.'
More literally: 'I like the bird kind like that.'

CHAPTER 4

AS-RELATIVES INTRODUCED BY *SAME*

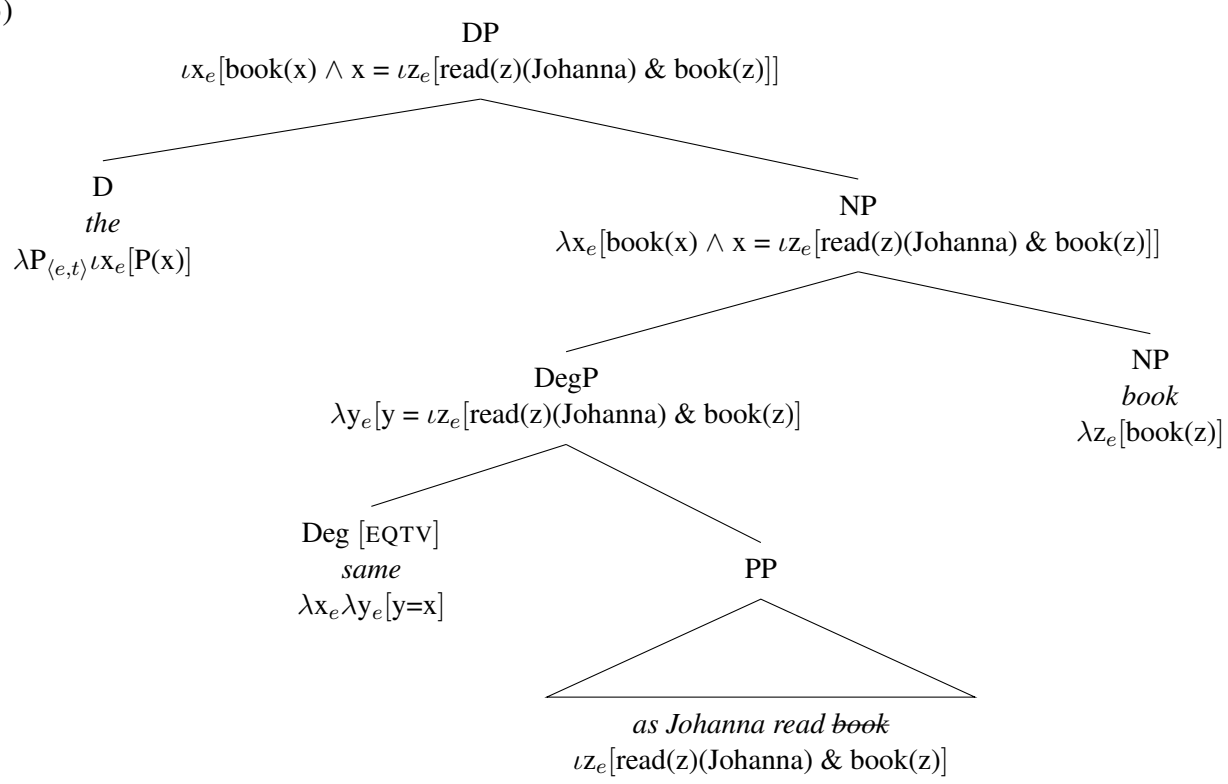
One of the main points of Chapter 2 was to highlight a systematic alternation between an anaphoric reading of *same* and one in which it introduces an *as*-relative:

(1) Johanna read *a book*$_i$. Mary read **the same book**$_i$.

(2) Mary read **the same book** [*as Johanna read*].

I argued that this alternation is driven by the fact that both the implicit argument in anaphora and the overt standard of equation are introduced in the same syntactic slot: both are selected by the degree head *same*. As was mentioned in Chapter 2, this is semantically possibly because both the implicit argument and the *as*-relative are of the same semantic type: e. I proposed the following composition above in the structure in (59) from Chapter 2, repeated in (3), in which the *as*-relative supplies the individual that saturates the first argument of [[*same*]], rather than the anaphoric index:

(3)



As the tree indicates, I have not yet given a concrete derivation for the material within the triangle: the individual denoted by the *as*-relative. The aim of this chapter is therefore to provide an analysis of *as*-relatives selected by *same* that accounts for their core syntactic and semantic properties. The chapter also addresses different types of cross-linguistic variation observed in the formation of *as*-relatives and the relationship between *as*-relatives and restrictive relatives.

4.1 Equative structures

I use the term 'equative' to describe structures that equate two syntactic objects of various types. Perhaps the most canonical equative in the literature is the *degree equative*, which establishes equality between the degree arguments of two gradable adjectives:

(4) *Degree equative*

Mary is as tall as Johanna.

There are many other types of equatives; below I list those cited by Rett (2013) and Anderson & Morzycki (2015):[1]

(5) a. *Kind equative*

I too have such a dog as yours.

b. *Manner equative*

Clyde behaved as I did. Anderson and Morzycki (2015: 6)

c. *Same/different construction*

John read the same book as Sue. Rett (2013: 1)

While Rett (2013) does group *same* into the family of equative constructions, I take this claim one step further and treat *same* as a degree head, establishing it more closely on a par with degree

1. There a number of other expressions that express equality (e.g. *generic equatives*) or similarity (e.g. *similatives*) in other ways, generally using *like* or *as*. I do not address these here, but see Rett (2013).

equatives. To explain descriptively the type of parallel I would like to make between adjectival and nominal equatives, I adopt the labeling convention given in Haspelmath & Buchholz's (1998) typological survey of adjectival equatives in Europe, shown below (Haspelmath & Buchholz (1998: 279); see also Henkelmann (2006)). In the following tables, 'PM' and 'SM' stand for 'parameter marker' and 'standard marker,' respectively.

Table 4.1: Components of an adjectival equative construction

My sister	is	as	old	as	you
comparatum	**copula**	**PM**	**parameter**	**SM**	**standard**

Following this schema, I treat nominal equatives as follows:

Table 4.2: Components of a nominal equative construction

Mary	read	the same	as	Johanna
comparatum	**copula**	**PM**	**SM**	**standard**

Above, *same* is treated as a parameter marker, and the parameter itself is lacking altogether.

4.2 Analyses of *as*-relatives

I have argued in the previous chapter that *as*-relatives introduced by *same* come to be individual-denoting. I begin the discussion of *as*-relatives by discussing previous analyses for various types of equatives, namely those equating kinds (Carlson 1977; Landman 2006; Anderson & Morzycki 2015), degrees (Rett 2013), and individuals (Matushansky 2010a,b; Charnavel 2015).

4.2.1 As-relatives in degree equatives

Rett (2013) aims to unite a variety of equative constructions involving *as*, paying particular attention to the distinction between degree equatives (6a), which use a parameter marker, and similatives (6b), which do not:

(6) a. John is **as** tall **as** Sue (is).

b. John danced **as** Sue did.

Rett assumes the following meaning for the parameter marker in degree equatives:

(7) $[\![as_{\text{PM}}]\!]$: $\lambda \text{D}_{\langle d,t\rangle} \lambda \text{D}_{\langle d,t\rangle} [\text{MAX(D)} \geq \text{MAX(D)}]$

She then assumes the following meaning for the degree equative, adopting the idea that the parameter marker *as* encodes a weak linear ordering (Horn 1972; Seuren 1984; von Stechow 1984; Schwarzschild & Wilkinson 2002):

(8) John is as tall as Sue

$[\![as]\!](\lambda \text{d}_d[\text{tall(sue, } d)])(\lambda \text{d}'_d[\text{tall(john, } d')])=$

$\text{MAX}(\lambda \text{d}'_d[\text{tall(john, } d')]) \geq \text{MAX}(\lambda \text{d}_d[\text{tall(sue, } d)])$

In her account, both the matrix clause and relative clause therefore need to denote properties of degrees. With respect to the embedded *as*-relative, Rett argues that the preposition *as* performs the function of a *wh*-operator, thereby allowing the *as*-relative to be property-denoting. Evidence for this comes from the fact that overt *wh*-elements are not allowed inside the *as*-relative (cf. comparatives, in which they are marginally allowed in English):

(9) John is as tall as (*what) Mary is. Rett (2013: 1106)

More specifically, Rett argues that the gap in the *as*-relative is simply a variable that remains unbound. In her analysis, the role of *as* is to serve as an unselective binder, which binds the free variable inside the proposition denoted by the relative clause, thereby turning the *as*-relative into a property-denoting expression. Rett's proposal therefore builds on Potts (2002a,b); Lee-Goldman (2012) in the proposal that *as* is a relativizer. Furthermore, based on Haspelmath and Buchholz's (1998) observation that the parameter marker plays the same roles across a variety of constructions

and languages, Rett suggests that an analysis in which the preposition introducing equatives is semantically vacuous is undesirable.

Rett also cites the following set of data from Stowell (1987) in support of the idea that *as* is an unselective binder. This set of data show that while there is evidence for movement with a form like *so*, the evidence for *as* points instead to base-generation in its prepositional position.

(10) a. Bill is a liar, as Mary already knows ___.

b. Bill is a liar, and so he has claimed ___ himself.

(11) a. *Bill is a liar, Mary already knows as.

b. Bill is liar, and he has claimed so himself.

Rett's analysis works as follows. First, the degree argument of the adjective in the embedded clause is valued as a free variable due to the lack of an overt binder. The standard marker *as* then binds that free variable at the edge of the subordinated clause, returning a property of degrees in the same way that a *wh*-operator would. The parameter marker *as*, whose meaning is given in (12), then takes this open proposition and binds the free degree variable, returning a property of degrees.

(12) $[\![as_{\text{SM}}\ S^{\delta}]\!]$: $\lambda \text{d}_{d}[[\![\text{S}^{\delta}]\!][\text{d}/\delta]$

The result of composition is then as shown in (13) (Rett 2013: 1109):

(13) John is as tall as Mary is.

a. syntax: $\text{as}_{\text{PM}}([_{\text{CP}}\ \text{as}^{\delta}{}_{\text{SM}}$ *Mary is* ~~δ *tall*~~$])([_{\text{CP}}\ \text{OP}_{d'}$ *John is d′-tall*$])$

b. semantics: $[\![as_{\text{PM}}]\!](\lambda \text{d}_{d}[\textit{tall(mary, d)}])(\lambda \text{d}'_{d}[\textit{tall(john, d}'\textit{)}])$

The analysis that *as*-relatives do not involve movement in the embedded clause faces a major challenge: this lack of movement predicts the lack of island effects. However, *as*-relatives introduced by *same* are in fact subject to a variety of island effects (Ross 1967). These facts are also mentioned in Matushansky (2010b) and at greater length in French in Charnavel (2015); they

are also discussed in Landman's (2006) work on kind equatives, which she refers to as 'such as' relatives. I return to show these island effects in §4.3.1.

4.2.2 As-relatives in kind equatives

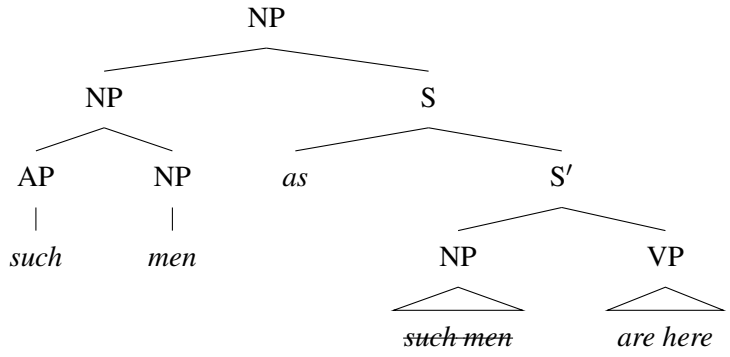
Aside from degree equatives, we saw in Chapter 2 that the degree head *such* also licenses *as*-relatives. An example of this is shown in (14), in which the *as*-relative 'as we met yesterday' modifies 'such women.'

(14) **Such women** [*as we met yesterday*] are a credit to society. Carlson (1977: 380)

In Carlson's (1977) seminal work on kinds, which I showed in Chapter 2 to point out the apparent anaphoric nature of as-relatives modifying *such*, he proposes that the *as*-relative itself supplies the anaphoric relation. This work therfore attempts to assimilate the *as*-relative use to its anaphoric use, much in the spirit of the analysis I present in §4.3. The structure Carlson assigns to kind equatives is schematized in the following tree, in which the matrix nominal has a deleted copy in the subordinate clause (Carlson 1977: 350) on a par with comparative deletion (Bresnan 1975):

(15) a. Such men as are here.

b.



As Carlson treats *such* as a kind anaphor on its cross-sentential use, he suggests that the antecedent supplying the anaphoric relation to matrix *such* in a structure like (15) is the deleted element *such men* in the subordinate clause.

Landman (2006) builds on Carlson (1977) by treating *such*-phrases modified by as-relatives

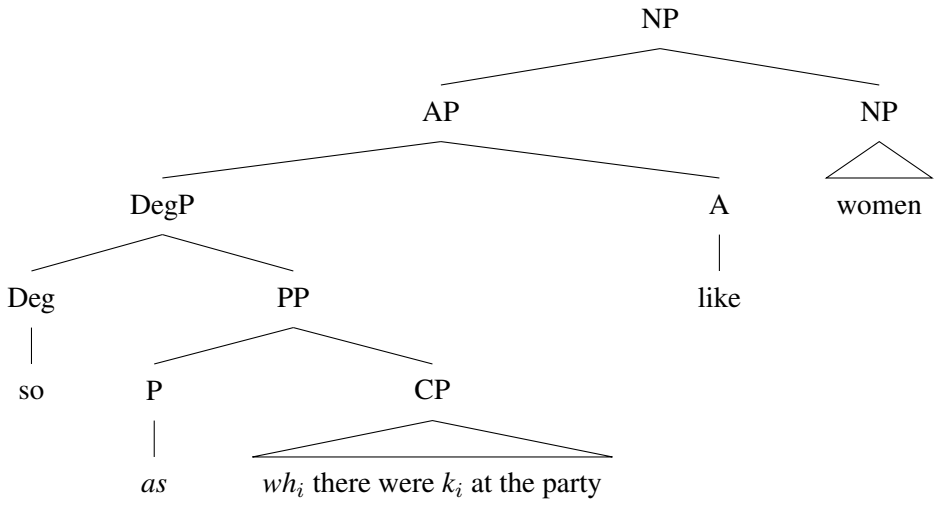
as instances of kind-anaphora. Recall from the discussion in Chapter 2 that Landman treats *such* as a complex element consisting of 'so' and 'like.' Semantically, Landman analyzes *so* not as a variable over kinds as she does in the case of anaphora, but as a relation between kinds, resulting in the interpretation of *such* as a generalized quantifier over kinds (Landman 2006: 68):

(16) [[so]] = $\lambda f_{\langle k,t\rangle} \lambda g_{\langle k,t\rangle}$[there is a k such that $f(k) = 1$ and $g(k) = 1$]

The accompanying structure she assumes for as-relatives is given in (17), leaving out steps involving QR not relevant here (Landman 2006: 55):

(17) a. Such women [*as there were at the party*]

b.



Th embedded PP contains a CP, in which there is covert *wh*-movement. Landman motivates the CP layer by showing that there are island constraints in *such as* relatives (p. 59):

(18) *Complex NP Island*

Such issues as John made the claim that he raised ___ at the meeting have been resurfacing for years.

(19) *Adjunct Island*

Such issues as John laughed when I raised ___ at the meeting have been resurfacing for years.

Landman further proposes that the gap in the embedded clause consists not in a variable as in restrictive relatives, but rather in a noun phrase which she terms a *k-like* NP. Evidence for this is the fact that the *as*-relative can contain an existential *there*-construction:

(20) Such women [*as there were* ___ *at the party*].

Landman therefore takes the gap to be a *k-like* NP rather than a definite variable, as definites are barred from participating in such constructions according to the *Definiteness Restriction* of Milsark (1974, 1977); Heim (1987):

(21) **There be x*, when *x* is an individual variable.

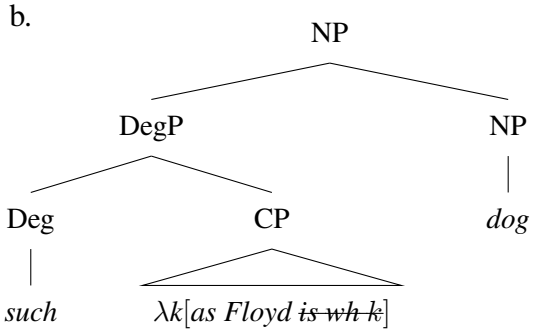
Landman then shows that, in contrast to *as*-relatives, this restriction can be seen in restrictive relatives, whose gaps contain definite arguments (Carlson 1977; Heim 1987):

(22) *Women that there were ___ at the party came to the show.

Anderson & Morzycki (2015) then further expand this line of reasoning. A schematic of their analysis of *such* with an as-relative is schematized in (23) (p. 29), which differs both in the treatment of *such* as non-decomposable degree head and in the structural assumptions about DegP:[2]

(23) a. Such a dog as Floyd

b.



2. The example Anderson & Morzycki (2015) are accounting for is from Polish, which is why the indefinite article is absent from this structure.

In (23), *such* composes with the as-relative rather than with an anaphoric variable over kinds. The property-denoting CP then undergoes the *Existential Closure Shift* (Partee 1987) and QRs to adjoin to the clause, leaving behind a kind-denoting trace (on a par with the movement of degree clauses):[3]

(24) [[SHIFT λk as Floyd ~~is~~ k] [λk$'$[such k$'$ dog]]]

While I do not give all the details of their analysis here, I note that the syntax proposed in Anderson & Morzycki (2015) (before QR) is precisely the same as I propose for *as*-relatives introduced by *same*, except that the embedded clause lacks a prepositional layer in the case of *such*.

4.2.3 As-relatives in nominal equatives

I now turn to the discussion of *as*-relatives introduced by *same*. While the interpretational properties of degree equatives and kind equatives has received a fair amount of attention in the literature, there has not been as much work on *as*-relatives embedded by *same*.

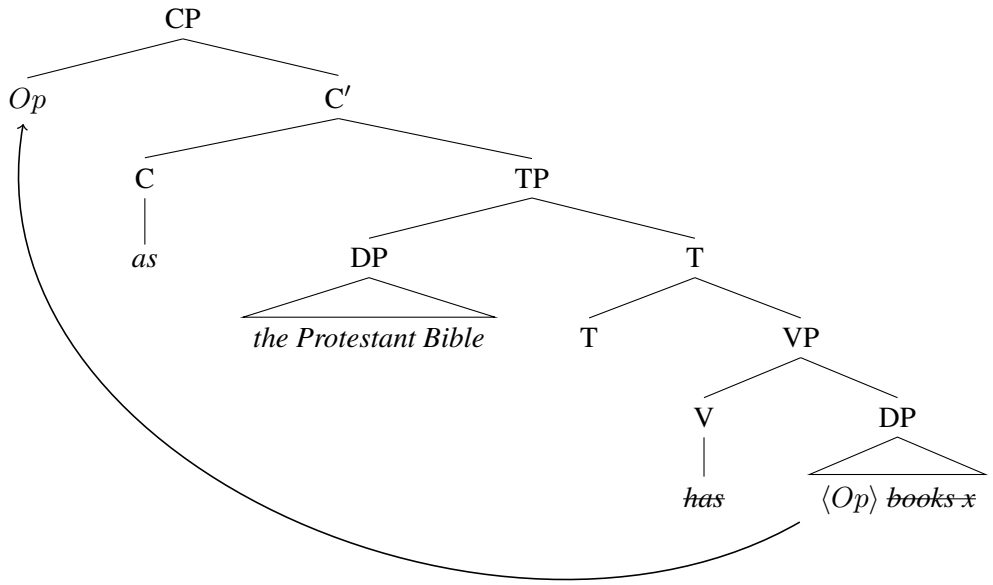
Recent work by Matushansky (2010b) gives an analysis of *as*-relatives that attempts to explain the relationship between *as*-relatives and restrictive relative clauses. Matushansky proposes that *as*-relative formation involves the movement of a null operator to Spec CP. Her analysis is schematized in (25), in which the gap of the *as*-relative contains both an operator as well as a plural individual variable *books*.[4]

3. Anderson & Morzycki (2015) do not commit to an analysis of how the CP comes to be property-denoting.

4. Matushansky (2010b) also makes use of a maximalizing operator, which I do not include here.

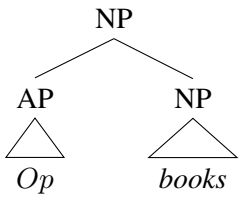
(25) a. The Catholic Bible has **the same books** [*as the Protestant Bible does*].

b.



A crucial aspect of Matushansky's proposal is that the operator in the gap position of the *as*-relative undergoes movement to the exclusion of the individual variable *books*. The internal structure of the gapped DP is as follows:

(26)



Her motivation for this aspect of the analysis is to derive the obligatory deletion seen in the example in (26). This looks to be on a par with comparative deletion:

(27) a. I saw the same dress **as yours**.

b. *I saw the same dress **as yours is (a) dress**.

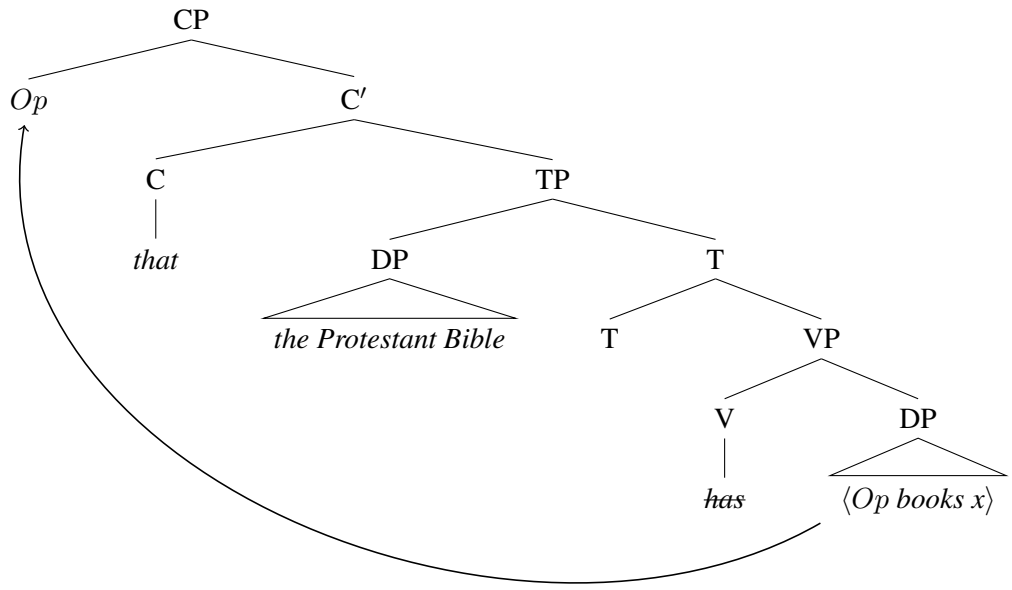
As Matushansky (2010b) points out, the movement of the operator to Spec CP to the exclusion of the other material within the embedded DP constitutes a Left Branch violation (Ross 1967; Corver

1990). She derives the obligatory deletion observed in (27) through Kennedy and Merchant's (2002) notion of *salvation by deletion*: in order to rescue the violation incurred by the left branch extraction, all material following the moved operator must be deleted. This line of reasoning follows the proposal that ellipsis may serve as a rescue operation for PF violations (Lasnik 1995).

According to Matushansky's proposal, restrictive relative clauses then differ from *as*-relatives in the amount of material that undergoes movement. In relative clauses, the entire gapped DP moves to Spec, CP, rather than just the operator. The structure for this is shown in (28):

(28) a. The Catholic Bible has **the same books** [*that the Protestant Bible does*].

b.



Matushansky argues that this analysis accounts both for the lack of obligatory VPE in relative clauses as well as the shape of the complementizer: the size of the moved constituent conditions the exponence of C (in a way not made explicit). I return to the relationship between *as*-relatives and restrictive relatives in §4.5.

There are several problems with Matushansky's analysis. The first problem is that Matushansky does not provide an analysis for the composition of the embedded *as*-relative with the matrix material. Secondly, the generalization that *as*-relatives obligatorily involve Verb Phrase Ellipsis is

not accurate. Matushansky (2010a: 1) reports the following judgment:

(29) *Lucius likes the same flowers as his father likes/bought.

However, such examples are in fact grammatical. This is supported by speaker intuition as well as by a quick Google search, resulting in the following hit:

(30) Camilla wore the same outfit **as she wore** to the Royal Wedding in April.[5]

For this reason, Matushansky's analysis erroneously predicts obligatory VPE in *as*-relatives introduced by *same*.

I now turn to Charnavel's (2015) treatment of French. Charnavel argues that French *même* ('same') (along with *différent* ('different') and *autre* ('other')) is a relational adjective that can take a comparative clause as its complement.

(31) Paul a vu **le même film** [*que Marie*].
Paul has watched the same movie as Marie
'Paul watched the same movie as Marie.'

To explain island effects in French, she proposes the following structure for the *as*-relative in (31) as in (32), in which the relative is housed in a CP and involves *wh*-movement of the compared (here, equated) element (following the analyses of comparatives in Hankamer (1973); Chomsky (1977); Heim (2000); Kennedy (2002b)), plus Verb Phrase Ellipsis (p. 151).[6]

(32) Paul a vu le même film que [$_{CP}$ ~~*wh film*~~ *Marie* ~~*a vu wh film*~~]

Charnavel provides the following meaning for *same* in French (p. 153):

5. http://joannefergusonbridal.blogspot.de/2012/06/dress-code-at-ascot.html

6. In French, unlike in English, the *as*-relative must at least be partially elided.

(33) [[*même*]]: $\lambda x_e \lambda y_e . \forall P \in C, P(x) = P(y)$, where

C is a set of contextually relevant properties, preferably including all possible properties.

In her account, *same* takes two individuals and specifies that all of their properties are identical, following insights from Alrenga (2007). The *as*-relative therefore saturates one of these individual arguments, but Charnavel is not explicit in how the embedded clause comes to be individual-denoting. One major benefit of Charnavel's analysis is however that she unites the use of *same* with what she refers to as 'comparative clauses' with other uses, such as the anaphoric use, as in (34):

(34) Lucie est allée voir *Frida* hier. Moi, j'ai vu **le même film**.
Lucie is gone to.see Frida yesterday. Me, I.have seen the same film.
'Lucie watched *Frida* yesterday. As for me, I watched the same film.'

In this case, the first argument of *same* is supplied by an implicit variable inside what appears to be a completely null comparative phrase rather than comparative clause (on her account), whose value is satisfied pragmatically (p. 151):

(35) j'ai vu le même film [~~que~~ X]

In my view, it is difficult to critically evaluate this proposal because there are many aspects of the analysis that are not made explicit. In particular, the properties of the embedded *as*-relative are not made clear. In the next section, I build on insights from the proposals of both Matushansky (2010b) and Charnavel (2015), and present my own proposal of *as*-relatives embedded by *same*.

4.3 Proposal

I now turn to the different characteristics of these *as*-relatives that need to be accounted for, and offer a treatment of these embedded clauses that achieves the desired result. I first discuss island effects observed in *as*-relatives embedded by *same*, and then turn to evidence for the nature of

the gap in these clauses. I ultimately propose a matching account (Lees 1960, 1961; Chomsky 1965; Carlson 1977; Sauerland 1998, 2003) of *as*-relatives that involves movement of an embedded argument to Spec, CP before deletion under identity with a matrix antecedent.

4.3.1 Island effects

As pointed out by both Matushansky (2010b) and Charnavel (2015), island effects are observed in *as*-relatives embedded by *same* (see also Landman (2006) for *as*-relatives embedded by *such*). The fact that these island effects are observed supports an analysis of *as*-relatives involving movement (cf. Rett 2013) I show this in the examples below, testing a variety of islands from Ross (1967):

(36) *Relative clause islands*

a. *Johanna ate the same pie [as we know a woman [who also did ___]].

b. *I saw the same film [as you met the person [who also did ___]].

(37) *Adjunct islands*

a. *Johanna ate the same pie [as the baker scolded the child [because he did ___]].

b. *I saw the same film [as the one you insisted on talking during [when you did ___]].

(38) *wh islands*

a. *Johanna ate the same pie [as you asked me [whether I could bake ___]].

b. *I saw the same film [as you asked me [when I wanted to see ___]].

(39) *Complex NP islands*

a. *Johanna ate the same pie [as she heard a rumor [that you did ___]].

b. *I saw the same film [as I heard the claim [that you did ___].

(40) *Subject islands*

a. *Johanna ate the same pie [as [the preparation of ___] was arduous].

b. *I saw the same film [as [the review about ___] was glowing].

The existence of such island effects lends itself to an analysis of *as*-relatives involving movement, contra the unselective binding approach of Rett (2013). Without movement, these island effects are not explained. Note that comparatives likewise exhibit island sensitivities (Bresnan 1973; Chomsky 1977), highlighting the similarities between equatives and comparatives. Based on these effects, I offer a proposal postulating movement in *as*-relatives embedded by *same* in §4.3.3.

4.3.2 Comparative deletion and the nature of the gap

I argue further that the gap in the *as*-relatives embedded by *same* is a definite individual whose nominal content is specified (cf. Landman 2006 on *such*; Charnavel (2015) on *same*). This analysis differs from treatments of comparatives that assume that the gap contains a deleted adjective in addition to a degree variable, as seen in (13) from Rett's (2013) analysis above:

(41) John is as tall as Mary is. (*syntax*)
$\text{as}_{\text{PM}}([_{\text{CP}}\ \text{as}^{\delta}{}_{\text{SM}}$ *Mary is* δ ~~*-tall*~~$])([_{\text{CP}}\ \text{OP}_{d'}$ *John is d′-tall*$])$

In many analyses of comparatives – and more relevant here, equatives – it is assumed that the gap in the embedded clause contains a gradable adjective that is identical to an adjective in the matrix clause. The embedded adjective is then deleted after undergoing movement to Spec, CP (Bresnan 1973), as described in the following formulation by Kennedy (2002b) (see also Kennedy (1999) and Kennedy & Merchant (2000)):

> [Comparative deletion] involves overt movement of the compared constituent to the specifier of a clausal complement of than/as, plus deletion under identity with the head of the comparative. Kennedy (2002: 556)

The presence of the adjective in the embedded clause is required for semantic reasons, namely because the degree morphemes *-er* and *as* are generally assumed to take two properties of degrees as their arguments, and the adjective is required to specify the scale that the degree refers to. This can be seen in equatives in the example in (42) from Rett (2013), repeated again from (13) above:

(42) John is as tall as Mary. (*semantics*)

$[\![as_{\mathrm{PM}}]\!](\lambda \mathrm{d}_d[tall(mary,\ d)])(\lambda \mathrm{d'}_d[tall(john,\ d')])$

Evidence for comparative deletion moreover comes from the existence of comparative sub-deletion (CD) Bresnan (1973, 1975), a term referring to constructions in which some (but not the entire) constituent is missing from the surface presentation of the complement of an equative or comparative. We observe this as well in adjectival equatives (Bresnan 1975; Kennedy & Merchant 2000):

(43) By actually refuting his own early self, Wittgenstein was as unusual as Frege was ___ noble when confronting – not to say applauding – Russell's objections.

Times Literary Supplement, 6.26.1998, cited by Kennedy & Merchant (2000: 91)

Comparative sub-deletion is generally licensed when the two adjectives refer to different properties: *unusual* and *noble* in the case of (43). The syntactic difference between comparative deletion and sub-deletion is argued by Kennedy (2002) to be whether movement of the compared constituent is overt or covert, as summarized below:

> [Comparative sub-deletion] involves covert movement of the compared constituent to the specifier of the complement of *than/as*. Kennedy (2002: 556)

Importantly however, in the case of *as*-relatives embedded by *same*, sub-deletion is not generally available:

(44) *I saw the same woman as you saw (the) ___ man.

(45) *I bought the same dress as you bought (the) ___ skirt.

This is of course intuitive, as the two objects being equated are necessarily the same individual, and so the general contrastive conditions licensing sub-deletion are not met. The man that was seen in (44) can never be identical to the woman that was seen, just as the skirt that was bought in (45)

can never be identical to the dress that was bought. These facts lead to the conclusion that *same* is not covertly present in the gap the way that a degree variable is present in the embedded clauses in degree equatives or comparatives. Rather, *same*-equatives are more like restrictive relative clauses in this regard.[7]

Finally, I turn here to evidence for whether the gap in the embedded clause should be treated as a definite individual or as a property, as was proposed in Landman's (2006) analysis of kind equatives. Recall that Landman's motivation for treating the gap in the *as*-relative as containing a *k-like* NP was that these gaps could follow the exisential *there*-construction. This is shown in (46), repeated from (20) above:

(46) Such women as there were ___ at the party.

Landman argues, according to the Definiteness Restriction of Milsark (1974, 1977), that the gap must contain a *k-like* NP rather than an individual variable.

Importantly, existential *there*-constructions are not licensed in *as*-relatives embedded by *same*, as shown in (47).[10]

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7. I note here that in the case of the type-reading of *same*, the facts about sub-deletion are different. Consider the example in (i), which is perhaps marginal, but not as ungrammatical as the cases shown above involving token *same*.

(i) I drive the same brand of car as you do ___ motorcycle.

Such examples tend to be marginal and seem to work the best in contexts involving reference to measurements, as shown in (ii):

(ii) If each individual pixel has the same height as it does ___ width. . . [8]

A similar example involving a phrasal standard is shown in (i):

(i) In fact, the arch has the same width as ___ height.[9]

I do not have much to say about these uses, but assume that the difference observed in deletion effects is a result of the fact that these examples do not involve the equation of token individuals, but of types or amounts (see Kennedy (2002a) for an overview of different types of relatives).

10. The judgments here are not entirely clear cut, but a google search and an informal survey of native speakers leads me to the conclusion that they are at least strongly dispreferred.

(47) */? I saw the same women as there were ___ at the party last night.

This means that *as*-relatives again pattern more like restrictive relatives whose head is definite, in which the *there*-existential is also strongly dispreferred:

(48) */? I saw the same women that there were ___ at the party last night.

Based on the lack of sub-deletion in *as*-relatives introduced by *same*, as well as the lack of a need to avoid a violation of the Definiteness Restriction in existential *there*-constructions, I put forward an analysis in the following section according to which the gap in the *as*-relative is a definite individual whose nominal content is specified, but which does not itself contain *same*.

4.3.3 Structure and interpretation of the as-relative

I now turn to my own analysis of *as*-relatives, which crucially makes use of the same denotation for *same* that was proposed in Chapter 2, repeated below in (49):

(49) [[*same*]]: $\lambda x_e \lambda y_e [y=x]$

I propose a treatment of *as*-relatives involving a matching analysis along the lines of that argued for relative clauses by Sauerland (1998, 2003) and Hulsey & Sauerland (2006), schematized in (50):

(50) the book $[_{CP}\ [_{DP}$which ~~book~~$_i$] John read t_i]

Under the matching approach to relative clauses, the external and internal heads of the relative clause are not derivationally related, but are required to be identical in order for the lower head to be deleted. Sauerland (2003) draws a comparison between these type of deletion and the type of obligatory deletion observed in comparatives, proposing that relative clauses involve so-called

relative deletion of their internal head:[11]

(51) **Relative Deletion**:

In matching relatives, the internal head must not be pronounced. Furthermore, the external head must be the antecedent of the internal head. Sauerland (2003: 31)

A major piece of evidence for the matching analysis comes from the lack of a Condition C violation in relative clauses, as shown in (52) (Sauerland 2003: 11):

(52) The relative of John$_i$ that he$_i$ likes t$_i$ lives far away.

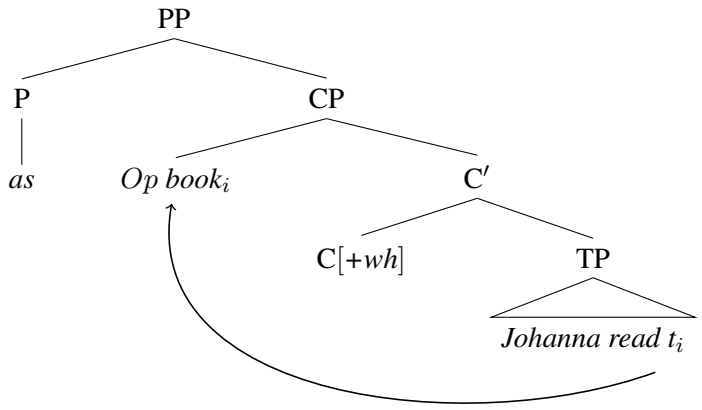
This fact is paralleled in *as*-relatives embedded by *same*:

(53) I have the same opinion of John$_i$ as he$_i$ does.

Adopting a matching analysis, the derivation of the *as*-relative is as follows. First, the internal head noun 'book', selected by Op, undergoes *wh*-movement to Spec, CP (Chomsky 1977):

(54) a. Mary read the same book as Johanna did.

b.



The composition of the clause embedded by *as* then proceeds as in (55), assuming that the relative

11. In related work, Sauerland (2004) and Hulsey & Sauerland (2006) define this deletion operation in terms of *movement deletion*.

operator does not make a semantic contribution, and that the property denoted after λ-abstraction undergoes Predicate Modifcation with the internal head, 'book' (Heim & Krazter 1998):

(55) *Derivation of an as-relative*:

a. *Embedded clause*

read(t_i)(Johanna)

b. λ*-abstraction*

λx_e[read(x)(Johanna)]

c. *Re-introduction of the moved head*:

λx_e[read(x)(Johanna) & book(x)]

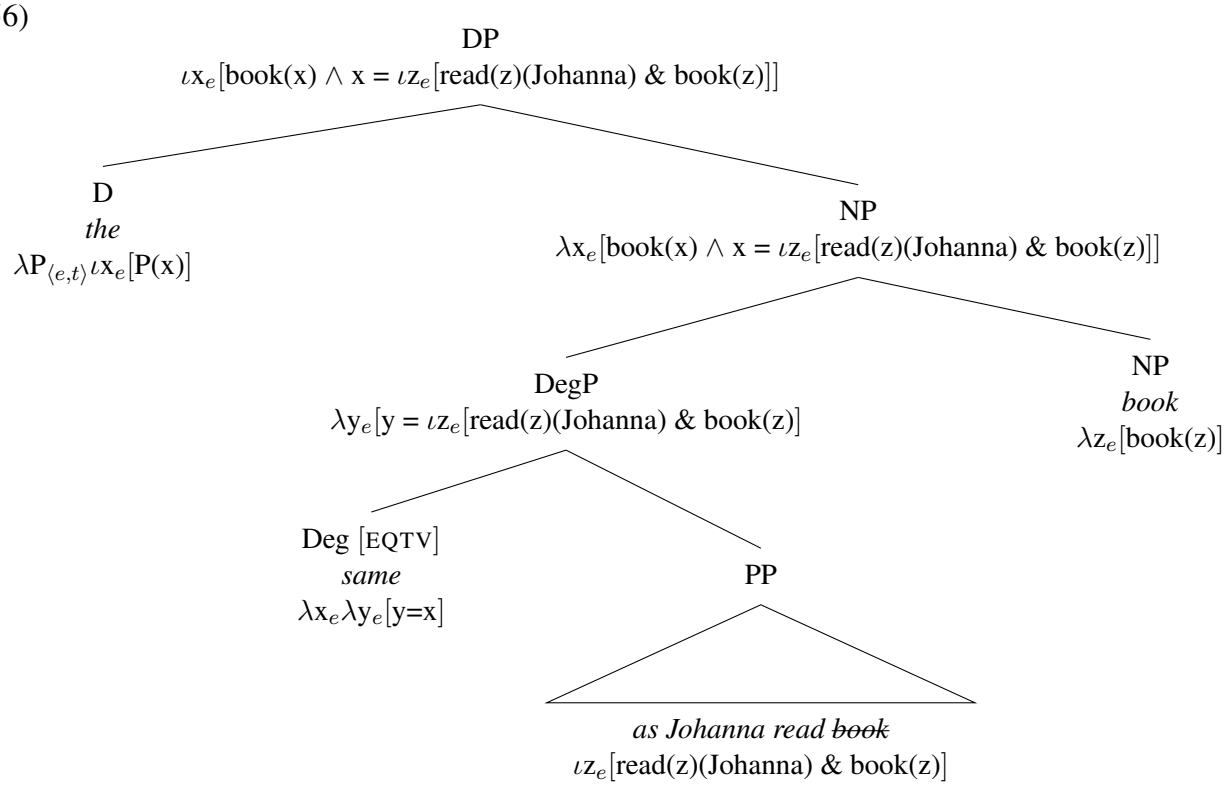
d. ι*-binding*:

ιx_e[read(x)(Johanna) & book(x)]

Note that, contra Matushansky (2010b), I treat *as* as a preposition, rather than as a realization of C. It is therefore tempting to suggest that the role of the preposition is to ι-bind the embedded clause, though it can also be implemented as a type-shift along the lines of Caponigro's (2003, 2004) account of free relatives.

Given the result in (55), the individual-denoting *as*-relative may saturate the first argument in *same*, as shown in (56) (repeated from (59) in Chapter 2):

(56)



4.4 Deletion effects in *as*-relatives

I now turn to discuss deletion phenomena observed in *as*-relatives embedded by *same*, paying particular attention to antecedent-contained deletion (i.a. Sag 1976; May 1985; Larson & May 1990; Wold 1995; Merchant 2000; Fox 2002; Kennedy 2002b; Bhatt & Pancheva 2004) and stripping (i.a. Ross 1969; Hankamer & Sag 1976; McCawley 1988; May 1991; Reinhart 1991; Fiengo & May 1994; Lobeck 1995; Depiante 2000; Merchant 2004, 2009; Yoshida et al. 2015).

4.4.1 Antecedent-contained deletion

The ellipsis observed in *as*-relatives constitutes a case of antecedent-contained deletion (ACD).

(57) Mary read the same book [*as Johanna did* ⟨*read* x⟩].

The problem posed by antecedent-contained deletion is that the assumption that the antecedent is

contained within the ellipsis site leads to a possible infinite regression of verb phrase within the embedded clause. I show here that ACD in *as*-relatives can be resolved in the same way as it does in restrictive relatives whose external head is definite, as in (58):

(58) [[the book (x) Johanna read (x)] [Mary read (x)]]

This means that in an example such as (57), the DP containing both *same* and the *as*-relative undergo QR, leaving behind a type e trace in object position (59a). Then, λ-abstraction binds the trace in object position and returns a property (59b). Finally, the raised DP ((59c), now of type $\langle\langle$e, t$\rangle$, t$\rangle$) composes with this property and returns a proposition (59d).

(59) *Derivation of QR*:

a. *Matrix clause after QR*:

[[*Mary read* t_i]]: read(t_i)(Mary)

b. λ-abstraction

[[*Mary read* t_i]]: λx_e[read(x)(Mary)]

c. *Raised DP*:

[[*the same book as Johanna read*]]: $\lambda P_{\langle e,t\rangle}$[P($\iota y_e$[read(y)(Johanna) & book(y)])]

d. *Composition with raised DP*:

[[*the same book as Johanna read*]] ([[*Mary read* t_i]]) =

$\lambda P_{\langle e,t\rangle}$[P($\iota y_e$[read(y)(Johanna) & book(y)])] (λx_e[read(x)(Mary)]) =

read(ιy_e[read(y)(Johanna) & book(y)])(Mary)

4.4.2 Stripping and phrasal standards

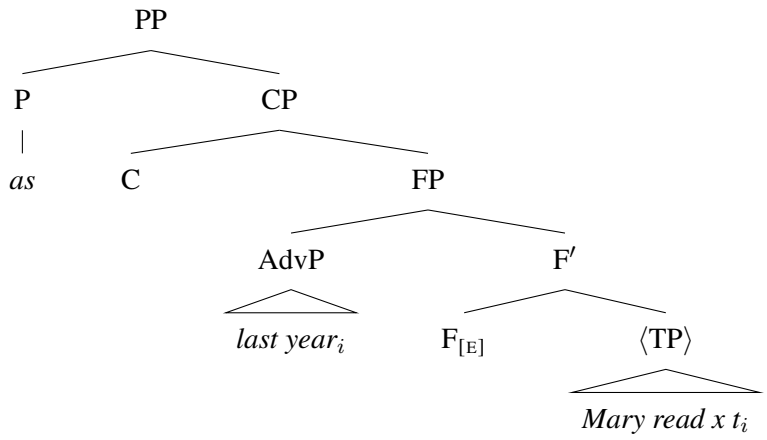
I now turn to a special case of ACD in the *as*-relative: stripping. While I have mainly focused on clausal standards above, what appear to be phrasal standards are also possible in nominal equatives. An example of this is shown in (60), in which a phrase follows *as*, rather than an entire clause:

(60) Mary read the same book again [*as last year*].

There are two options to account for examples of this type, which are to treat the constituent selected for by *as* as: i) a DP, adopting a purely phrasal analysis, or ii) a full clause missing much of its phonology, i.e. as a reduced clause (the *direct* vs. *reduction* analyses in the terminology of Lechner 2004; Bhatt & Takahashi 2011).

Following Merchant's (2009) work on comparatives in Greek and what he calls the standard analysis of reduced clausal comparatives, I treat (60) as involving movement of the remnant (pronounced) constituent to a focused position past TP, plus subsequent deletion of the entire TP (i.e., stripping, see also Matushansky 2010b). Both of these steps are shown in (61):

(61)



Following Merchant (2009) (who builds on his work on clausal ellipsis observed in fragment answers in Merchant (2004)), I assume that deletion of the TP is triggered by the head that triggered movement into its specifier, in this case FP, which bears an e-feature.

Consider now a different type of phrasal standard, as shown in (62), in which the phrase following *as* is also the equated argument (cf. (61)):

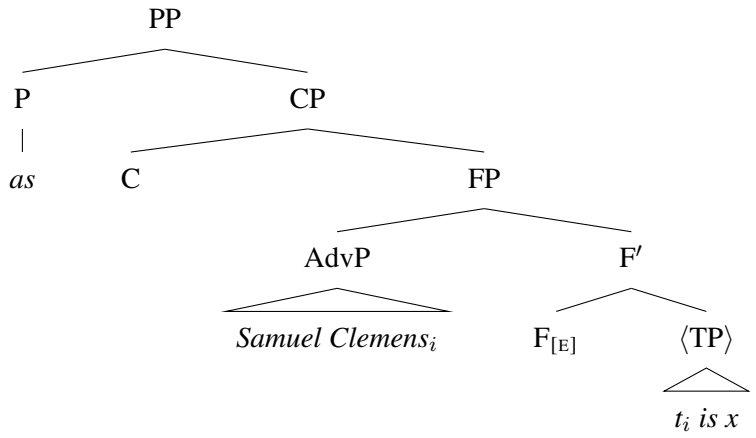
(62) Mark Twain is the same person [*as Samuel Clemens*].

There are two ways to treat the phrase following *as* in (62): either it is reduced clausal equative

involving clausal deletion on a par with the case in (61), or it is a true phrasal standard, i.e., there is no underlying structure and this phrase alone is an argument of *as*. Given the meaning I have proposed for *same* above, we face a semantic clash: the *as*-phrase now denotes an individual. There are two options to remedy this: we either propose that the definite description denoted by 'The Evening Star' undergoes the IDENT type-shift (Partee 1987), converting it to a property meaning, or we assume that there is an underlying clausal source for such examples.

Building on Matushansky (2010b), I will provide an analysis for the second route here. Adopting the reduced clausal analysis leads to the following structure, in which the embedded subject 'Samuel Clemens' moves out of a TP containing the copula 'be.'

(63)



4.4.3 Subject-auxiliary inversion

Subject-auxiliary inversion (SAI), found in many constructions in English (see Bruening (2015) for a recent overview), is likewise found in *as*-relatives introduced by *same*. Auxiliary inversion refers to the phenomenon in which one or more auxiliaries inverts with the subject it otherwise follows. An example of such inversion in the case of *as*-relatives can be seen in (64b), in which the auxiliary *does* inverts with the subject of the embedded clause, *her father*:

(64) a. Johanna drives the same car [*as* ***does*** *her father*].

b. Johanna can drive the same car [*as* ***can*** *her father*].

c. Johanna would like to drive the same car [*as* ***would*** *her father*].

These examples stand in contrast to cases in which the auxiliary verb appears in its usual lower position:

(65) a. Johanna drives the same car [*as her father* ***does***].

b. Johanna can drive the same car [*as her father* ***can***].

c. Johanna would like to drive the same car [*as her father* ***would***].

As pointed out by Merchant (2003), inversion in related comparative clauses is only possible in the context of VPE. This observation is summarized in the generalization below:

(66) *Comparative SAI and VP-ellipsis generalization*:
I-to-C movement in comparative clauses can occur only if VP-ellipsis has deleted the VP complement to I^0. Merchant (2003: 55)

This is also true of *as*-relatives embedded by *same*, as shown in (67):[12]

(67) a. *Johanna drives the same car [*as* ***does*** *her father drive*].

b. *Johanna can drive the same car [*as* ***can*** *her father drive*].

c. *Johanna would like to drive the same car [*as* ***would*** *her father like (to drive)*].

To account for SAI in these constructions, I follow LaCara's (2016) treatment of auxiliary inversion in predicate *as*-parentheticals (*as*-parentheticals that contain a predicate-sized gap), as exemplified in (68):

12. Unlike *as*-parentheticals, *as*-relatives do not seem to permit multiple auxiliaries in SAI:

(i) *Johanna should have driven the same car [*as* ***should have*** *her father*].

(68) Tim is happy, [*as* ***is*** *Daisy*]. LaCara (2016: 1)

LaCara (2016) relates subject-auxiliary inversion in predicate *as*-parentheticals to the obligatoriness of VPE within this construction. He follows Weir's (2014) proposal that focused material can move out of ellipsis sites at PF in order to avoid ellipsis, and argues for the movement of subjects out of the vP due to their being focused elements (Culicover & Winkler 2008), to the exclusion of other elements in the *as*-parenthetical.

Weir (2014) follows Merchant's (2004) proposal that fragment answers are derived from full clauses which have undergone IP-ellipsis after the fragment has moved out of that TP:

(69) a. A: What did Harvey kiss?

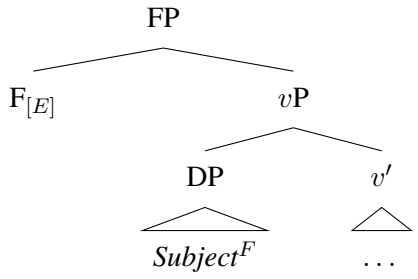
b. B: A pig$_i$ [$_{\text{IP}}$ $\langle$ Harvey kissed t$_i\rangle$].

Weir argues that the fragment seen in (69b) survives deletion as a result of a PF rescue operation (see also Yoshida et al. (2015)), and is not result of movement in the syntax as proposed by Merchant (2004). He gives two pieces of evidence to support his proposal: i) the answer in (69b) is not a felicitious answer to the question posed in (69a) when ellipsis does not occur, and ii) elements that cannot generally undergo A$'$-movement cannot undergo focus-fronting.

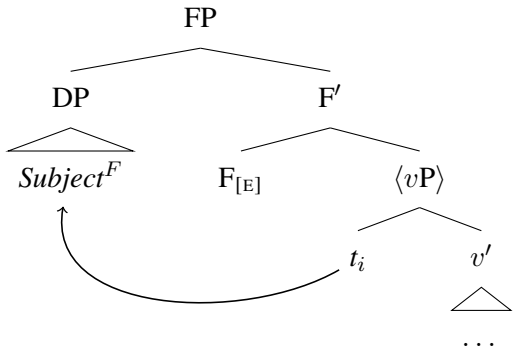
According to his proposal, the subject must be pronounced, as it bears a focus feature and therefore must be assigned prosodic focus at PF; focused material is not allowed to be deleted (Merchant 2001; Takahashi & Fox 2005; Weir 2014). However, because the subject occurs within the ellipsis site, it must undergo *exceptional focus movement* in order to escape deletion.

After adopting a low subject position (inside vP), La Cara (2016) argues that subject-auxiliary inversion within *as*-parentheticals can be derived using the same mechanisms proposed in Weir (2014). The spell-out an PF structures for this proposal are schematized in (70), in which the landing site of this movement is the specifier of FP, a focus projection selecting for vP, whose head bears an E-feature triggering ellipsis of its complement (p. 140):

(70) *Structure at spell-out*



(71) *Structure at PF*



This results in the inversion effect, if the auxiliary is pronounced in its normal position (i.e., in T), and the focused subject is pronounced in this lower position.[13] This analysis extends fairly straightforwardly to instances of SAI in *as*-relatives embedded by *same*, giving that VPE is also required in such contexts.

Of course, another difference between the two types of movements we have seen so far is that the movement in SAI is limited to subjects, and no other types of elements may invert, as shown with an adverbial remnant in (72):

(72) *Johanna drives the same car [*as* ***did*** *yesterday*].

LaCara (2016) motivates this restriction by arguing that only the subject material in inverted contexts can be focused (see also LaCara 2015). The same is true of *as*-relatives embedded by *same*:

(73) a. Johanna can drive the same car [*as can* HER FATHER$_{\mathrm{F}}$].

b. *Johanna can drive the same car [*as* CAN$_{\mathrm{F}}$ *her father*].

The movement seen in SAI contexts therefore differs from that observed in the stripping cases in the landing site of the moved element. This is arguably because the movement of the remnant in reduced clausal equatives happens in the syntax, while it occurs post-syntactically as a rescue

13. As LaCara points out, one problem for this analysis is how to explain the EPP violation, given that the subject does not move to Spec, TP. He ultimately proposes that the EPP feature on T is satisfied by the movement of an operator through this position on its way to Spec, CP.

operation in SAI.

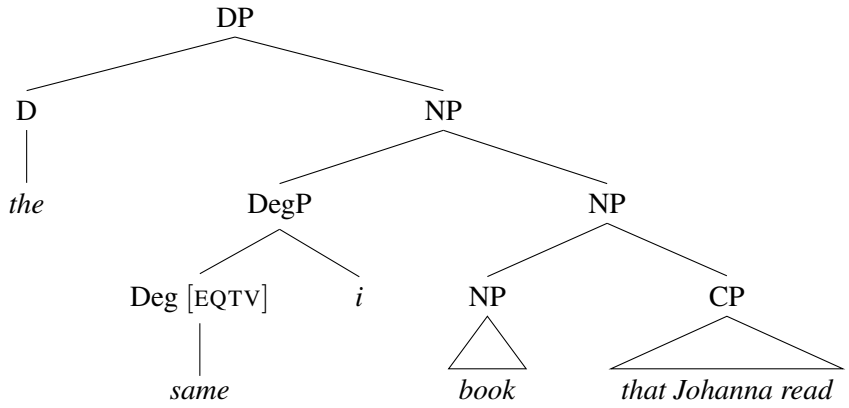
4.5 *As*-relatives vs. *that*-relatives

Matushansky's (2010b) attempt to unify *as*-relatives with restrictive relatives, though unsuccessful, is an intriguing one. In principle, there are two ways to think of restrictive relatives clauses whose external head is modified by *same*, as in (74):

(74) Mary read the same book [*that Johanna read*].

The first option is that *same* is simply an optional modifier in relative clauses, which adjoin to the NP in the typical way. In this approach, *same* still selects for in index in the same way it does in anaphora.

(75)



A problem with this approach from a semantic perspective is that it is not possible to give the correct meaning for the structure in (75) that also makes use of the meaning of *same* presented so far. Recall that the meaning of *same* takes two individuals and places them in a relationship of equation with one another. This meaning is repeated in (76):

(76) [[*same*]]: $\lambda x_e \lambda y_e [y = x]$

If *same* first composes with the index before it composes with the nominal modified by the relative

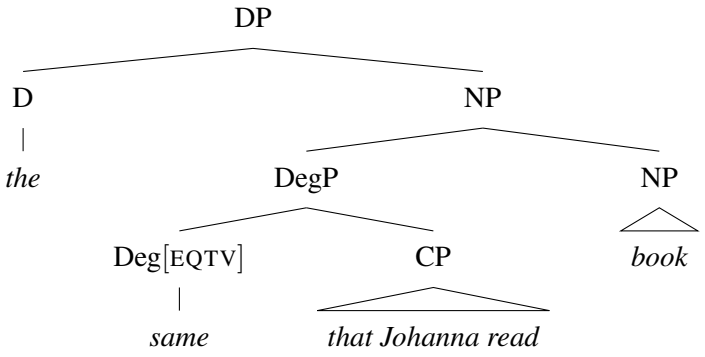
clause, we will get a meaning for the entire DP as in (77):

(77) [[*the book that Johanna read*]]^{g}: ιx_{e}[book(x) & read(x)(Johanna) & x = g(*i*)]

The meaning in (77) is perfectly acceptable, but we run into the same problem here that we did for internally headed relative clauses in Washo: we wind up with an anaphoric meaning for a DP that is not anaphoric.

Another option, related to Matushansky's (2010b) proposal, is to assume that *same* selects for *that*-relatives in the same way that it selects for *as*-relatives. On the current approach, this means that the embedded CP is seledcted for by Deg, as shown in (78) (and undergoes extraposition just like the *as*-relative does).

(78)



This approach has the benefit of being straightforward to implement compositionally, based on what we saw above in the case of *as*-relatives. This is because the relative clause, like the *as*-relative, is property denoting; in the structure in (78) it can therefore saturate the first argument of *same* in exactly the same way that the *as*-relative does if it likewise undergoes the IOTA type shift. I adopt this proposal, which treats the composition of the example in (78) as follows in (79):

(79) *Derivation of a restrictive relative embedded by same*:

a. *Relative clause*

[[that Johanna read ~~book~~]]: λx_{e}[read(x)(Johanna) & book(x)]

b. IOTA-*shift*

[[that Johanna read ~~book~~]]: ιx_e[read(x)(Johanna) & book(x)]

c. *Composition with [[same]]*

$\lambda x_e \lambda y_e$[y = x] (ιx_e[read(x)(Johanna)]) =

λy_e[y = ιx_e[read(x)(Johanna)]]

d. *Composition with [[book]]*:

λy_e[y = ιx_e[read(x)(Johanna)]] (λy_e[book(y)]) =

λy_e[y = ιx_e[read(x)(Johanna)] & book(y)]

e. *ι-binding by D*:

ιy_e[y = ιx_e[read(x)(Johanna)] & book(y)]

Note the parallel here with the difference between anaphora with and without *same*. While the restrictive relative clauses below appear almost identical, differing only in the presence of a modifier, they in fact arise from different underlying structures.[14]

(80) Mary is reading **the book** [*that Johanna read*].

(81) Mary is reading **the same book** [*that Johanna read*].

Therefore, while it may seem that *same* is simply an optional modifier in relative clauses, its presence is in fact indicative of the presence of a degree structure.

This analytical approach is supported by languages that make use of a different standard marker in nominal equatives with *same* than they do in adjectival equatives. Spanish is one such language,

14. Note that there is still evidence from German for an index layer in restrictive relative clauses without *same*, whose external head surfaces with the strong, anaphoric form of the article. I repeat in (i) example (22) from showing this:

(i) Fritz wohnt jetzt {**in dem**, #**im**} Haus, von dem er schon seit Jahren schwärmt.
Fritz lives now in the in+the house, from REL he already since years raves
'Fritz now lives in the house that he has been raving about for years.'

See Hanink & Grove (2017), who give an analysis of this along the lines of the analysis I proposed above for internally headed relatives in Washo.

which uses the standard marker *como* ('how, like') in degree equatives:

(82) Juan es **tan** alto [***como*** *Pedro*].
Juan is as tall how Pedro
'Juan is as tall as Pedro.'

However, Spanish uses the invariant relativizer *que* in nominal equatives, which is the same form complementizer seen in restrictive relatives (the facts are the same for French *que* ('that') vs. *comme* ('how')). This is shown in the examples below: (83) (repeated from (76) in Chapter 2), is only distinguishable from its relative counterpart without *same* (84) in the size of deletion it allows; the verb may be omitted in (83) but not (84).

(83) Juan leyó el **mismo** libro [***que*** *(leyó) Pedro*].
Juan read the same book that Pedro
'John read the same book as/that Pedro (read).'

(84) Juan leyó el libro [***que*** *(*leyó) Pedro*].
Juan read the book that read Pedro
'John read the book that Pedro read.'

Notably, this is the same standard marker used in comparatives, which likewise allow verb deletion in the *than*-clause:

(85) Juan es **más** alto [***que*** *Pedro*].
Juan is more tall than Pedro
'Juan is taller than Pedro.'

4.6 Raising vs. matching

In this section I discuss the potential availability of a raising structure of *as*-relatives. Bhatt (2002) presents a series of data which differentiate between the raising and matching analyses of relative clauses, which have been argued to both be available for English (Carlson 1977; Sauerland 1998

et seq.). Unlike the matching analysis, the raising analysis contends that the external head of the relative clause originates in the embedded clause, and is not base-generated in its upstairs position (i.a. Brame 1968; Schachter 1973; Vergnaud 1974). This type of analysis is schematized in (86):

(86) the book$_i$ [$_{\text{CP}}$ [$_{\text{DP}}$which t$_i$] John read t$_i$]

One set of data that supports the raising analysis over the matching analysis comes from idioms. As described in Bhatt (2002), the argument is that the availability of an idiomatic interpretation, even in cases when part of the idiom is external to the relative clause, lends itself to a raising analysis. In the examples in (87) and (88) (attributed to Brame (1968) and Schachter (1973) in Bhatt (2002)), the idiomatic readings in the (a) variants are preserved in the (c) variants, even when they are interrupted by a relative clause boundary. The (b) variants by contrast, are ungrammatical:

(87) a. We made headway.
b. *(The) headway was satisfactory.
c. The headway that we made was satisfactory.

(88) a. Lip service was paid to civil liberties at trial.
b. *I was offended by (the) lip service.
c. I was offended by the lip service that was paid to civil liberties at the trial.

The raising analysis captures this facts through the claim that the external head begins life in the embedded clause, and is therefore contiguously part of the idiom at one point in the derivation.

I show in (89) and (90) that the facts are no different for *as*-relatives and *that*-relatives embedded by *same*, suggesting that a raising analysis must likewise be available in these constructions:[15]

(89) We made the same (amount of) headway as was required.

(90) We made the same (amount of) headway that was required.

15. Bhatt (2002) also provides an argument for the raising analysis from 'high' and 'low' interpretations of adjectival modifiers that may not co-occur with *same*, such as 'first', making this test unavailable here.

However, *as*-relatives and *that*-relatives embedded by *same* provide an interesting problem for the idea that the idiomatic reading is preserved by the raising analysis. This is because Hulsey & Sauerland (2006) argue on the basis of examples such as in (91) that raising is required to account for the interpretation of idioms in relative clauses (p. 114):

(91) a. Mary praised the headway that John made.

b. *Mary praised the headway last year that John made.

The gist of their reasoning is that raising is required to account for the interpretation of the idiom, and that extraposition past the temporal adverb 'last year' blocks this possibility. Similarly, they argue that the same blocking effect is observed in cases of binding violations that generally argued to be made possible by a raising analysis, as in (92) (p. 115):

(92) a. I saw the picture of himself$_i$ that John$_i$ liked.

b. *I saw the picture of himself$_i$ yesterday that John$_i$ liked.

However, the presence of *same* changes these judgments in both the *as*-relative (a) and restrictive relative (b) variants, as I show in (93):

(93) a. Group A made the same (amount of) headway in today's meeting as Group B did.

b. Group A made the same (amount of) headway in today's meeting that Group B did.

The same is true for the binding examples:

(94) a. I saw the same picture of himself$_i$ today as John$_i$ showed me yesterday.

b. I saw the same picture of himself$_i$ today that John$_i$ showed me yesterday.

Taken together, these data suggest that a raising analysis is also possible for *as*-relatives and *that*-relatives embedded by *same*, while also suggesting that the relationship between raising and extraposition warrants re-evaluation.

4.7 Conclusion

The aim of this section has been to give an account of *as*-relatives embedded by *same* that accounts for their core syntactic and semantic properties. From a syntactic perspective, the fact that *as*-relatives obey island effects leads to the conclusion that their derivation involves the movement of a null operator from base position. From a semantic perspective, evidence from sub-deletion and the Definiteness Restriction leads to the conclusion that the gap in *as*-relatives embedded by *same* is an individual whose nominal content is specified. I have argued that the internal head of the relative is deleted in accordance with the matching analysis of relative clauses. Aside from these core properties, I have also shown that basic deletion facts observed in *as*-relatives all follow from independent proposals in the domain of comparatives (Merchant 2009), relative clauses (Sauerland 1998 et seq.), and predicate *as*-parentheticals (LaCara 2016). Finally, I have proposed a parallel analysis of *as*-relatives and restrictive *that*-relatives introduced by *same*, and offered evidence for the need for a raising analysis as well.

CHAPTER 5

POSTSYNTACTIC INFLECTION OF THE DEGREE PHRASE

5.1 Introduction

The present chapter turns from the structure and interpretation of attributive degree phrases to the morphological realization of nominal inflection – or *concord* – within those phrases. While the proposal begins with a puzzle arising from the inflectional behavior of *same* in German, the account extends to a variety of inflectional patterns observed within other types of simple and complex attributive degree modifiers.

Recent accounts of concord advance the view that inflection in the nominal domain is realized in the postsyntactic component of the grammar (building on i.a. Halle & Marantz 1993; Bobaljik 2008). In particular, Norris (2012, 2014) contends that DP-internal agreement is realized by the insertion of Agr nodes – a type of dissociated mopheme (Noyer 1997) – onto individual, concord-bearing heads after Spell-Out (see also i.a. Baier 2015; Deal 2016; Pietraszko 2017). A consequence of this proposal is that inflection is realized on heads only, and that if a head can realize inflection, it necessarily does so.

This chapter examines this approach against data from German, which I show to be problematic for an account along these lines. To preview the problem, consider the examples in (1), in which the noun *Auto* ('car') is preceded by the complex comparative modifier *brauner als braunes* ('browner than brown'):[1]

(1) a. ein [braun-er als braun-**es**] Auto
a brown-COMP than brown-**INFL** car

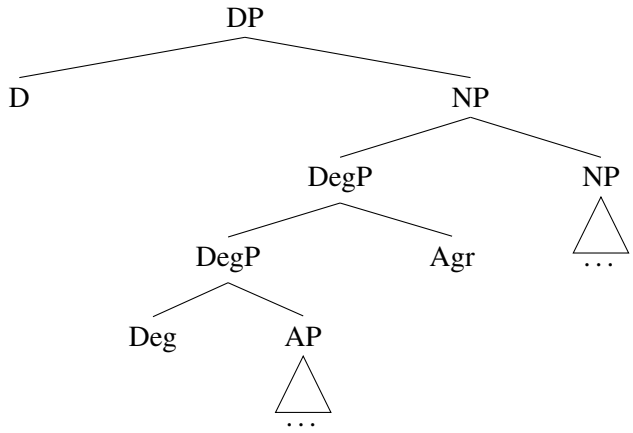
b. *ein [braun-er-**es** als braun(-**es**)] Auto
a brown-COMP-**INFL** than brown-**INFL** car
'a car that's browner than brown.' (Roehrs 2006: 222)

1. In most of the examples that follow, I will simply write 'INFL' to gloss the inflectional morpheme on adjectives, abstracting away from specific features. This is because the features themselves will not play a role in the analysis.

In complex modifiers of this kind, only the right-most adjective – in this case *braun* ('brown') – may be inflected (i.a. van Riemsdijk 1998; Grosu 2003; Roehrs 2006). Notably, the inflected adjective is not the head of the modifier: the comparative adjective *brauner* ('browner') remains bare. Crucially, the pattern of phrasal inflection as in (1) cannot be captured by accounts along the lines of Norris (2014), in which Agr node insertion is defined at the level of the head only: such an account cannot explain why only the rightmost, non-head adjective is inflected.

I put forward a modified proposal for postsyntactic inflection that can account for the German inflectional pattern shown in (1), as well as other patterns of inflection in the language that are incompatible with the specifics of Norris's proposal. While I build largely on proposals along the lines of Norris (2012, 2014), I argue instead that Agr node insertion occurs at the phrasal level – in particular, at DegP – rather than at the level of the head. The analysis to follow therefore takes seriously the idea that adjectives always occur inside a DegP shell (Abney 1987; Corver 1990, 1997a; Kennedy 1999), and is previewed in the structure in (2):

(2)



In light of puzzling inflection patterns observed in the German degree phrase, the present proposal makes the following, overarching claim: attributive inflection on adjectives in German is always the result of a dissociated Agr morpheme inserted at DegP. This proposal is to shown to account for a variety of data as well as to extend to an apparent instance of non-phrasal inflection in German: ATB inflection in coordinated adjectives. Importantly, the account explains as well the seemingly adjectival inflection observed on the modifier *same*, despite its treatment above as a

type of degree head, a category which otherwise lacks inflection in German.

I begin this chapter by presenting a puzzle from the inflection of *same* in German. I then move on to give an overview of adjectival inflection in German and present a short summary of syntactic approaches that have aimed to account for these patterns. I then present data from synthetic and analytic degree expressions, laying out the current problem for Norris's account in more detail. After that, I present the proposal and then provide support with further data from complex degree modifiers. Finally, I turn to an apparent case of non-phrasal inflection in German coordinate structures, showing how the proposal extends to such cases if we assume that the Agr morpheme may undergo pointwise attachment.

5.2 The problem of inflection on *same*

In Chapter 2, I argued that *same* has the syntactic category of a degree head, explaining among other things its ability to introduce either anaphora or an *as*-relative. Problematic for this proposal – or at least seemingly so at first glance – is the fact that other analytic degree heads in German do not inflect, while *same* does. The examples in (3) demonstrate the problem: *same* inflects (3a) in precisely the same way as adjectives do in the language (3b).

(3) a. vom selb**-en** Haus
from.the same-DAT.SG.NEUT house
'from the same house'

b. vom blau**-en** Haus
from.the blue-DAT.SG.NEUT house
'from the blue house'

Compare this to the behavior of other analytic degree heads in German, which never bear inflection. This can be seen below in the complex modifier in (4) (modified from Vikner & Wood (2011: 94)), in which the pre-nominal adjective *schlecht* ('bad') is inflected (4a) but in which the degree head *so* ('so/as/such') must remain bare (4b):

(4) a. ein [so schlecht-**es**] Hotel
a so bad-**NOM.SG.NEUT** hotel

b. *ein [so-**es** schlecht(-**es**)] Hotel
a so-**NOM.SG.NEUT** bad-**NOM.SG.NEUT** hotel
'such a bad hotel'

While data such as these seem to present a challenge for the treatment of *same* as a degree head, perhaps leading to the temptation to simply label *same* as an adjective, I show that the inflection of *same* is in fact consistent with its status as a degree element. In what follows, I show that the behavior of attributive inflection in German – which seems to occur sometimes on A, while at other times on Deg – follows from a postsyntactic, phrasal account of nominal concord.

5.3 Background on German inflection

Nominal inflection in German marks distinctions in case, gender, and number. While adjectives are not the only nominal element that inflects in German, they are the focus of this section. Adjectival inflection in German is well-studied in the literature (i.a. Wurzel 1984, 1989; Sauerland 1996; Roehrs 2006, 2009, 2013; Roehrs & Julien 2014; Roehrs 2015; Leu 2008), and is well-known in particular for the distinction it displays between the so-called 'strong' and 'weak' inflections on determiners and adjectives (Grimm 1870). I now turn to summarize this distinction.

5.3.1 The strong/weak distinction

The type of inflection that an adjective bears is determined by whether or not a definite determiner precedes it: the first element in the noun phrase bears strong inflection, and only one element in the noun phrase may bear strong inflection.[2] The strong endings on determiners are the same as those on adjectives (i.a. Milner & Milner 1972; Roehrs 2006 et seq.; Leu 2008, 2015). In the tables

2. The indefinite determiner results in the so-called 'mixed' paradigm of inflectional endings, which I do not address here. See Roehrs (2006) et seq. for discussion and analysis of this paradigm.

below I give the paradigms for both types of inflection, from Sauerland (1996).[3]

Table 5.1: Strong inflectional endings in German

Case	masculine	neuter	feminine	plural
Nominative	-r	-s	-e	-r
Accusative	-n	-s	-e	-e
Dative	-m	-m	-r	-n
Genitive	-n	-n	-r	-r

Table 5.2: Weak inflectional endings in German

Case	masculine	neuter	feminine	plural
Nominative	-e	-e	-e	-n
Accusative	-n	-e	-e	-n
Dative	-n	-n	-n	-n
Genitive	-n	-n	-n	-n

As discussed in Roehrs (2006) (and later revised in subsequent works), this generalization can be described atheoretically by the *Principle of Monoinflection* (Helbig & Buscha 2001; Eisenberg 1998; Wegener 1995; Darski 1979):

(5) **Principle of Monoinflection**

The first element within a noun phrase carries the strong and the second one the weak ending. Roehrs (2006: 162)

Examples of this principle are demonstrated in (6), from Leu (2015: 56). The example in (6a) shows both a determiner and an adjective. Following the Principle of Monoinflection, only the determiner bears the strong inflectional ending. In (6b) on the other hand, the adjective is not preceded by a determiner and is therefore inflected with the strong ending.

3. These endings do not reflect epenthetic vowels between the adjectival stem and the inflectional suffix.

(6) a. d**-er** sehr gut**-e** Wein
the-**STRONG** very good-**WEAK** wine
'the very good wine'

b. sehr gut**-er** Wein
very good-**STRONG** wine
'very good wine'

There are various approaches in the literature that aim to account for the strong/weak inflectional distinction. I now turn to summarize representative proposals that rely on a syntactic approach to inflection.

5.3.2 Syntactic accounts of inflection

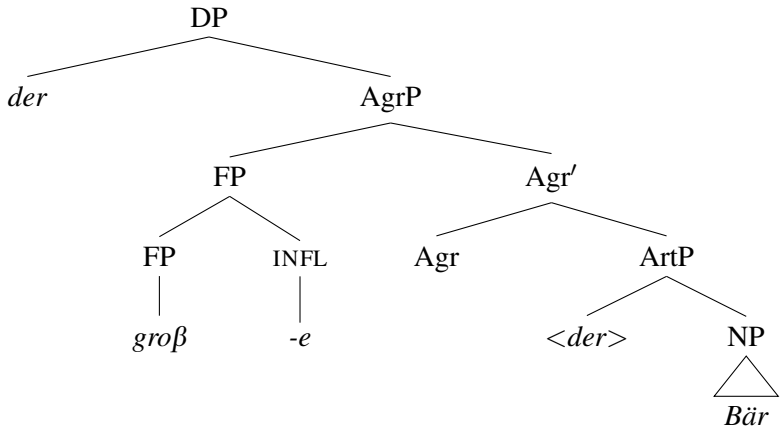
Much work on attributive inflection in German has drawn a parallel between TP/IP in the clausal spine and an inflectional phrase in the extended projection of DP (i.a. Corver 1997b; Roehrs 2006, 2009, 2013, 2015; Leu 2008; Schoorlemmer 2009, 2012). Major motivations for this type of approach come from the need to i) differentiate between strong and weak inflections on determiner-adjective sequences in German; and ii) account for phrasal inflection in complex attributive modifiers. I present in this section two representative accounts of recent syntactic approaches to adjectival inflection in German (see Corver (1997) for an influential analysis of Dutch).

Roehrs (2009) proposes that adjectives are introduced in the specifier of an Agr head in the extended nominal projection (Cinque 1994; Giusti 1997) that licenses them. He also proposes an additional INFL head within the attribute itself, which contributes the inflectional suffix. This accounts for an example such as (7a) with the structure shown in (7b):[4]

4. In a later implementation of this type of proposal, Roehrs (2015) also makes use of an extra projection, DefP, in order to account for alternations between the strong and weak endings as well as to derive variation across Germanic languages.

(7) a. der groβ-e Bär
the big-INFL bear
'the big bear'

b.



In Roehrs's (2009) account, the determiner is merged in a lower projection and only then moves to D. The determiner acquires its strong ending by moving through Agr on its way to D in a successive-cyclic fashion. Roehrs explains the accompanying weak inflection on the adjective by adopting Sauerland's (1996) proposal that the feature bundles on adjectives are reduced by impoverishment in the context of a determiner in a local domain.

Roehrs (2009) argues moreover that a syntactic treatment of attributive inflection in German accounts for examples such as (8), in which the inflectional suffix *-e* unexpectedly attaches (only) to the last element in the AP (the adjective *möglich* 'possible'), despite the fact that *möglich* itself is not the head of AP (see also van Riemsdijk (1998) on phrasal inflection in German and Dutch).

(8) a. Ein [so schnell wie möglich**-es**] Aufräumen
an as fast as possible-**INFL** cleaning-up

b. *Ein [so schnell**-es** wie möglich(**-es**)] Aufräumen
an as fast-**INFL** as possible-**INFL** cleaning-up
'a cleaning that's as fast as possible.'

In Roehrs's system, a phrase must move past INFL in order to receive inflection. The idea is that, in such cases, the entire phrase in (8) (which he labels 'COMPP' for 'comparative phrase') can move past INFL to attach to an entire phrase like *so schnell wie möglich* ('as fast as possible') as in (9),

explaining why it always occurs on the right-most edge, regardless of whether other adjectives are present within the modifier (e.g. *schnell'* ('fast'), in the case of (8)).

(9) $[_{\text{INFLP}}\ [_{\text{COMPP}}\ \textit{so schnell wie möglich}]_i$ INFL *-es* [... t_i ...]]

Because the inflectional morpheme is realized by its own head in the syntax, adjacent to the AP, it is exponed just once on the periphery of the modifier, resulting in phrasal inflection. As Roehrs (2006) notes, phrasal inflection is only possible in cases where the right-most element is indeed an adjective. It is not possible, for example, with an adverb such as *genug* 'enough.' Compare (10a), in which *genug* is in predicate position to (10b), in which it is in attributive position:

(10) a. Das Auto ist schön genug.
the car is nice enough
'The car is nice enough.'

b. *das [schön**-e** genug**-e**] Auto
the nice-**INFL** enough-**INFL** car
Intended: 'the car that's nice enough'

Roehrs (2006) argues on these grounds that the syntactic structure of the pre-nominal modifier must still be visible at the time of inflection, in order to explain why adverbs do not receive inflection: inflection is conditioned only by the presence of an adjective and cannot occur on any other category. I return to discuss this issue in §5.10. Note that in this type of approach, inflection is realized by its own head (INFL), but is licensed by Agr. The lack of inflection in predicative adjectives in German can therefore be explained by the fact that Agr is selected for by D, which is absent in predicative position. I return to discuss predicative agreement in §5.11.

In a related account, Leu (2008, 2015) argues that nouns, determiners, and adjectives in German all start out in the extended projection of the adjective phrase. This extended projection (xAP) contains an inflectional layer as well, headed by the inflectional head AGR. Strong inflection on an adjective is licensed by movement past this inflectional layer, which is blocked in case a definite

determiner is present.[5] Just as in Roehrs's account, the element that moves past AGR can be complex, explaining phrasal inflection. The way Leu's account works is illustrated in (11), taking as an example the alternation shown above in (6). In (11), the adjective *gut* ('good') stays put, as the presence of the determiner higher in the phrase blocks its movement. The determiner then bears strong inflection, and the adjective bears weak inflection. Leu (2008, 2015) does not specify the mechanism resulting in weak inflection.

(11) a. d**-er** sehr gut**-e** Wein
the-**STRONG** very good-**WEAK** wine
'the very good wine'

b. $[_{\text{NP}}\ [_{\text{xAP}}\ \textit{d-}\ \ldots\ \textit{-er}_{\text{AGR}}\ \ldots\ \textit{gut-e}\ \ldots\ ]\ [_{\text{N}'}\ \textit{Wein}\ ]]$

In (12) on the other hand, there is no determiner to block movement of the adjective, so it moves past Agr and receives strong inflection.

(12) a. sehr gut**-er** Wein
very good-**STRONG** wine
'very good wine'

b. $[_{\text{NP}}\ [_{\text{xAP}}\ \textit{gut}_i\ \ldots\ \textit{-er}_{\text{AGR}}\ \ldots\ \text{t}_i\ \ldots\ ]\ [_{\text{N}'}\ \textit{Wein}\ ]]$

Similar to both Roehrs's and Leu's approaches to inflection is that both make use of a syntactic node in the tree, AGR/INFL, that hosts adjectival inflection. Both likewise remain agnostic as to the precise mechanism that results in agreement.

Finally, in a different type of syntactic approach, Schoorlemmer (2009, 2012) presents an analysis of adjectival inflection across Germanic that relies solely on Agree. This analysis fits in with a recent line of research on nominal concord that aims to treat inflection in the nominal domain on a par with agreement observed elsewhere, e.g. in subject-predicate agreement (i.a. Baker 2008; Kramer 2009; Carstens 2011, 2013; Danon 2011; Toosarvandani & van Urk 2012), an approach going back to the notion that agreement is licensed in syntax through Agree (Chomsky 2000,

5. In Leu's account, the indefinite article is not part of xAP.

2001).[6] While I do not discuss the details of the analysis here, as most of the focus is on the Scandinavian languages (see also Kester 1993 on Swedish), the core of the proposal contends that adjectival agreement is the result of clausal T agreeing with both a noun and its modifiers, and of the adjective being c-commanded by a D head that has moved past it from lower in the structure. In his proposal, Schoorlemmer does not make use of an Agr phrase in the syntax, but does not otherwise discuss how inflection comes to be exponed.

What unites all of these syntactic accounts is that agreement is in some way depend on syntactic movement: either the adjective moves past an inflectional head (Roehrs 2006 et seq; Leu 2008, 2015), or D moves past the adjective to license inflection. In the next section, I move on to discuss recent postsyntactic approaches to inflection that neither require an inflectional head in the syntax nor require any syntactic movement.

5.3.3 Norris's (2014) postsyntactic account of inflection

Unlike an approach along the lines of Schoorlemmer (2009, 2012), Norris's (2012, 2014) treatment of concord in Icelandic and Estonian argues that the type of inflection observed in the nominal domain does not arise in the same way as other types of agreement relations (Kester 1993; Norris 2012, 2014; see Baier 2015 for a mixed approach). His motivation for this view comes from the differences observed in the two types of agreement. I now summarize the differences he uses to motivate the split between agreement within and outside of the DP.

First, while verbs in many languages agree with just one argument (e.g., the subject), concord targets a variety of DP-internal elements (e.g. determiners, numerals, quantifiers, adjectives, etc.). Second, the agreeing element in subject-verb agreement is a head (I/T), while in nominal concord the probing element can occupy a variety of structural positions, namely all those occupiable by determiners or nominal modifiers. Third, the source of agreement within TP (the subject) comes from a separate phrase (DP), while in the case of nominal concord, the internal nominal head

6. See Norris (2014) for an overview of proposals that extend theories of subject-verb agreement to concord outside the domain of Chomsky's Agree-based theory.

supplies the values within the same phrase it occupies. Finally, while subject-verb agreement can display case sensitivity in that verbs may not agree with arguments bearing all case values (e.g., probes like T may be sensitive to the case values of possible goal (Bobaljik 2008; Preminger 2011, 2014), such sensitivities are not known to be observed in the domain of concord. These differences are summarized in the following table (Norris 2014: 102):

Table 5.3: Norris's (2014) comparison of subject-verb agreement and concord

	Subject-verb agreement	Concord
Number of loci of expression (in Estonian)	one	many
Structural position of agreeing elements	head	head, specifier, adjunct
Feature origin	external	internal
Case-dependence	yes	no

Based on these differences, Norris (2014) proposes that, while agreement occurs in the syntax, the realization of inflection is always determined postsyntactically. His proposal can be characterized by three key aspects: i) the postsyntactic realization of inflection is determined on a head-by-head basis; ii) only these heads, call them concord-bearing elements, trigger Agr node insertion; and iii) it is only where Agr is inserted that inflection may be realized. The formulation of Norris's rule for Agr node insertion is given in (13), where X is determined language-specifically.

(13) **Agr node insertion**: $X^0 \rightarrow [X^0\ Agr^0]_X$ Norris (2014: 151)

Aside from Agr node insertion, Norris's (2014) approach involves both a syntactic and a morphological component. In the syntax, features percolate to DP from heads throughout the nominal, with ϕ-features contributed from (functional) projections below D.[7] Feature percolation is defined below (Norris 2014: 134):

7. Case is proposed to be assigned to DP by the relevant head, e.g. T or *v*, following Danon (2011).

(14) **Feature Percolation Principles**:

a. All projections of a head X^0 have the feature-value pairs that X^0 has.

b. Let [F:val] be a valued feature on XP.
Let Z^0 be a head lacking the feature [F].
Let X^0 and Z^0 be members of the same extended projection (i.e., both [+N]).
When Z^0 merges with XP, projecting ZP, ZP also has the value feature [F:val].

In the postsyntax, the percolated features on DP (as well as the case feature assigned from the verbal layer) are then *copied* onto the inserted Agr nodes according to the following rule (Norris 2014: 157):

(15) **Feature Copying (concord)**:
For every unvalued feature [F:__] on an Agr node Z_{Agr}, copy the value from a projection XP iff:

a. XP has a value for [F:__] ([F:α])

b. XP includes Z_{Agr},

c. There is no YP such that YP has a value for [F:__], YP dominates Z_{Agr}, and XP dominates YP (i.e. copy the closest value)

In the next section, I evaluate how Norris's recent postsyntactic proposal fares with data from German, highlighting the problems they pose for particular aspects of his analysis.

5.4 Synthetic degree expressions in German

In this section, I preview the overarching problem for Norris's (2014) proposal that I discuss at length in the remainder of this chapter: the exponence of inflection in attributive degree modifiers in German. I first demonstrate the problem with synthetic comparatives and superlatives, and then show how it extends to other attributive degree modifiers as well. Recall Norris's rule for Agr node

insertion, repeated below in (16) from (13) above:

(16) **Agr node insertion**: $X^0 \rightarrow [X^0\ Agr^0]_X$ Norris (2014: 151)

According to Norris's proposal, Agr node insertion should apply at each instance of a concord-bearing element in a given language. Data from German however show that the rule as formulated in (16) cannot be right, at least for adjectival inflection.[8] The problem is as follows: In the general case, adjectives are concord-bearing elements that agree with the head noun of the NP in case, gender, and number when in attributive position (as mentioned above, predicative adjectives do not inflect). This can be seen in the examples below, in which the form of the inflection on the adjective varies according to the features on the noun they modify, thereby showing that adjectives in German are concord-bearing elements in Norris's sense:

(17) *Covariance of adjectival inflection*

a. die klug-**e** Frau
the clever-**NOM.SG.FEM** woman
'the clever woman'

b. ein schnell-**es** Auto
a fast-**ACC.SG.NEUT** car
'a fast car'

c. den groβ-**en** Männern
the tall-**DAT.PL.MASC** men
'the tall men'

However, in the case of synthetic comparatives (18) and superlatives (19), inflection (henceforth glossed as INFL), must surface *outside* the degree morpheme, and cannot be adjacent to the adjectival stem (in this case *schnell* ('fast')):

8. Norris (2014) also accounts for a variety of other inflection-bearing heads, which I do not address here.

(18) *Comparative -er*

a. ein schnell-er-**es** Auto
a fast-COMP-**INFL** car
'a faster car'

b. *ein schnell-**es**-er Auto
a fast-**INFL**-COMP car
Intended: 'a faster car'

(19) *Superlative -st*

a. das schnell-st-**e** Auto
the fast-SPRL-**INFL** car
'the fastest car'

b. *das schnell-**e**-st Auto
the fast-**INFL**-SPRL car
Intended: 'the fastest car'

If adjectives are concord-bearing elements in the language, they should always trigger Agr node insertion, according to Norris's proposal; we would therefore expect (18b) and (19b) to be grammatical. Of course one possible explanation for the observed pattern, which we can immediately reject, is simply that Deg is also a concord-bearing head in German, licensing inflection.[9] This is not the case: recall that in analytic degree expressions such as that in (20) (repeated from (4)), the degree head may never host inflection:

(20) ein [so(*-**es**) schlecht-**es**] Hotel
a so-**INFL** bad-**INFL** hotel
'such a bad hotel' Wood & Vikner (2011: 94)

The generalization that emerges from this set of data is that Deg bears inflection just in case it is an adjectival suffix. Given Norris's account, these facts are only compatible if we adopt a lexicalist approach according to which synthetic degree expressions are formed pre-syntactially

9. This would also potentially predict too many inflectional morphemes on synthetic modifiers: one after A, and one after Deg.

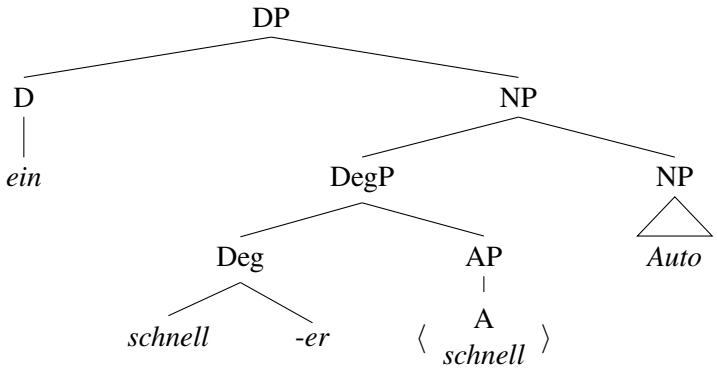
in the lexicon (Kiparsky 2005); this approach would predict that inflection occurs outside Deg in the case of synthetic degree forms because the entire expression is formed as an adjective pre-syntactically. However, given recent lines of inquiry showing that analytic and synthetic forms are in competition with one another (Bobaljik 2012), it is desirable to maintain the assumption that degree expressions are not pre-formed in the lexicon, but are derived in the syntax.

5.5 Proposal

The proposal that I put forward to address these concerns builds on Norris's basic account, but makes one major modification: in the postsyntax, Agr nodes are inserted at DegP, rather than at individual terminal nodes containing concord-bearing heads. Continuing with the structural assumptions in previous chapters, I adopt the proposal that AP is housed in DegP (Abney 1987; Corver 1990, 1997; Grimshaw 1991; Kennedy 1999). The structure of a comparative such as (21a) (repeated from (18)) is then as in (21b), after the head of AP head-moves to Deg in the syntax:[10]

(21) a. ein schnell-er-**es** Auto
a fast-COMP-**INFL** car
'a faster car'

b.



Given this structure, the problem with Norris's formulation of Agr node insertion is that it erroneously predicts the following unattested inflectional pattern in (22), as Agr will be inserted at A, but not at Deg:

10. I omit the implicit degree variable that takes the place of an overt standard of comparison, cf. the above discussion of Alrenga et al. (2012).

(22) *ein schnell-es-**er** Auto
a fast-**INFL**-COMP car
Intended: 'a faster car'

To remedy this, I propose the following, modified rule of Agr node insertion, according to which Agr is inserted at DegP:[11]

(23) **Agr node insertion (for adjectival concord)**: DegP $\rightarrow$ [DegP $\text{Agr}^0]_{\text{DEGP}}$ /__ NP

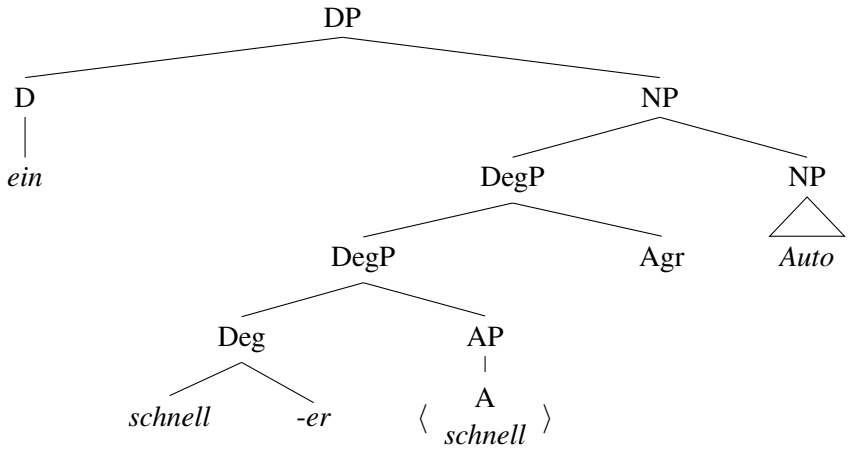
Another way to think about this rule is to conceive of Agr node insertion as applying at the maximal projection of DegP, where 'maximal projection' is defined in the following sense (see also Chomsky 1986):

(24) **Maximal projection**:
XP is maximal iff there is no XP immediately dominating it.

The rule does not apply at every Deg or even at every DegP; it applies only in the context of an adjacent NP, accounting for the phrasal nature of the inflectional suffix (I return to discuss possible differences in the formulation of this rule in §5.11). The rule in (23) will then result in the following structure in (25), with Agr surfacing between DegP and NP:

11. This rule is only designed to account for adjectives, and not for other types of nominal modifiers.

(25)



While I have modified Norris's rule of Agr node insertion, I adopt without modification his two-step system of feature percolation and copying, which together govern how features wind up on Agr after its insertion. First, feature perolation (repeated from (14) above) results in all ϕ-features on the head noun percolating to D:

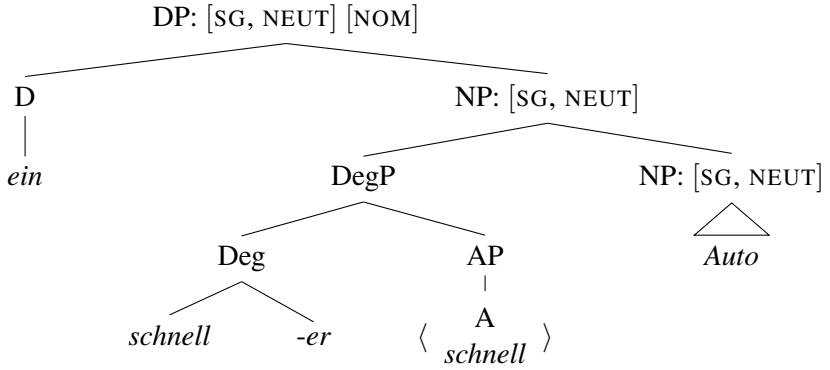
(26) **Feature Percolation Principles**:

a. All projections of a head X^0 have the feature-value pairs that X^0 has.

b. Let [F:val] be a valued feature on XP.
Let Z^0 be a head lacking the feature [F].
Let X^0 and Z^0 be members of the same extended projection (i.e., both [+N]).
When Z^0 merges with XP, projecting ZP, ZP also has the value feature [F:val].

This step is shown in (27), in which the case value has also been copied onto DP from some case-assigning head above (e.g. T or *v*, again following Danon 2011):

(27)

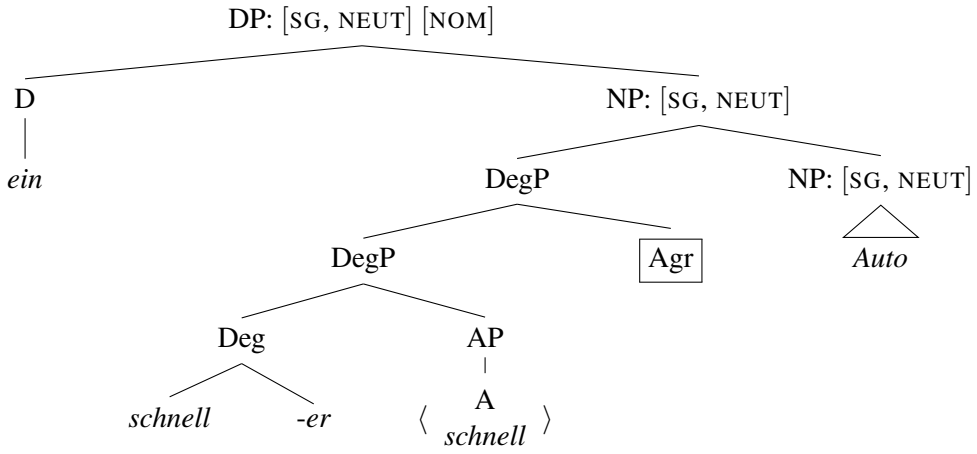


Next, the rule for Agr node insertion (repeated from (23)) applies:

(28) **Agr node insertion (for adjectival concord)**: DegP $\rightarrow$ [DegP Agr^0]$_{\text{DEGP}}$ /__ NP

The application of this rule then results in the following structure, in which Agr is right-adjoined to the DegP that immediately precedes the NP:

(29)



Finally, the process feature copying (repeated from (15)) results in all features on D being inserted onto the Agr node.

(30) **Feature Copying (concord)**:

For every unvalued feature [F:__] on an Agr node Z_{Agr}, copy the value from a projection XP iff:

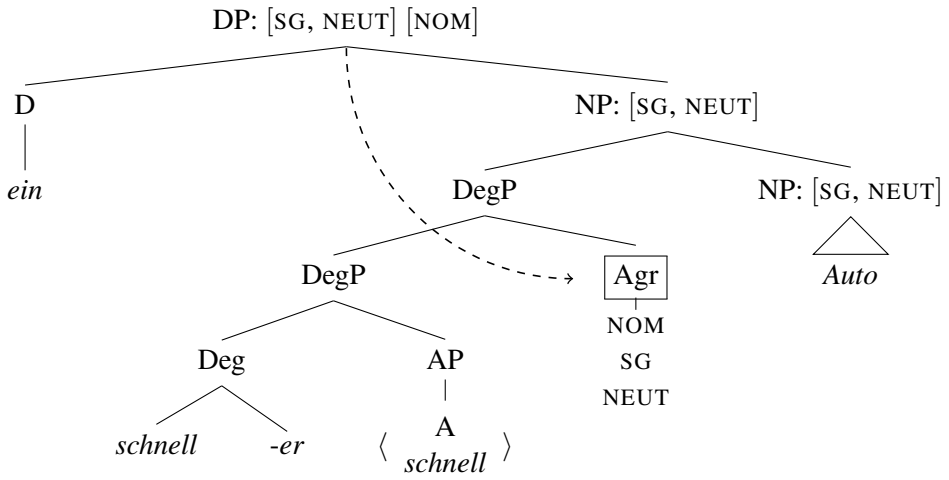
a. XP has a value for [F:__] ([F:α])

b. XP includes Z_{Agr},

c. There is no YP such that YP has a value for [F:__], YP dominates Z_{Agr}, and XP dominates YP (i.e. copy the closest value)

The Agr node inserted at DegP will therefore accordingly bear the features of DP copied onto it, as schematized in (31). This bundle of features will be the target of exponence at vocabulary insertion.

(31)



I adopt the framework of Distributed Morphology (Halle & Marantz 1993) and further assume that Agr node insertion, as a form of morphological concord, precedes other postsyntactic operations. This assumption is consistent with the order of postsyntactic operations proposed by Arregi & Nevins (2012), which is summarized in the table below:

I propose further that the inflectional morpheme that comes to expone Agr ends up as a suffix on the right-most element as an instance of local dislocation (Embick & Noyer 2001: 562-563), a linear operation that rebrackets adjacent material, for example converting (32a) to (32b):

(32) a. [X $*$ [Z $*$ Y]]

b. [[X + Z] $*$ Y]

Table 5.4: The order of postsyntactic operations (Arregi & Nevins 2012)

…
↓
MORPHOLOGICAL CONCORD
(AGR NODE INSERTION)
↓
LINEARIZATION
↓
LINEAR OPERATIONS
↓
VOCABULARY INSERTION

Following Embick & Noyer (2001: 562), '$a*b$' indicates a requirement that a must linearly precede and be *adjacent* to b. Further, 'a+b' indicates that a precedes and is *adjoined* to b. Crucially, local dislocation lacks access to labels, and operates only over adjacent sequences (and does not, e.g., target heads, as in the case of postsyntactic *Lowering*). While local dislocation will be string vacuous in many of the examples derived below, it will become especially important in the discussion of ATB inflection in coordination, see §5.7.

Given these ingredients, the postsyntactic derivation of the synthetic comparative then proceeds as in (33) below. I write the exponed version of the AGR node here for expository purposes (e.g. *-es* in the case of the nominative neuter singular feature bundle), though vocabulary insertion in fact occurs after linearization is complete, in accordance with the order of operations in Table 1.[12]

(33) a. **Linearization**:

[$_{\text{DEGP}}$[$_{\text{DEGP}}$ schnell ∗ er] ∗ es]

b. **Local dislocation**:

[$_{\text{DEGP}}$ schnell ∗ er + es]

c. **Surface form**:

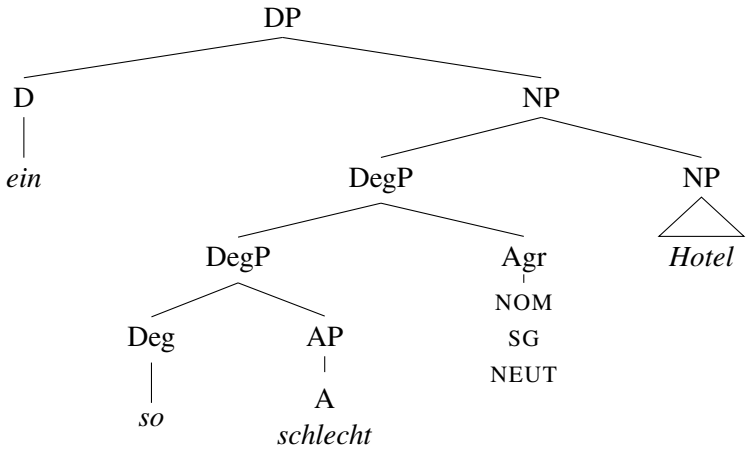
schnelleres

12. There are other aspects of word boundary formation in these examples that I ignore for the sake of clarity, e.g. the suffixhood of the comparative morpheme, in this case.

Following these steps, the account correctly predicts that inflection will occur outside the degree morpheme in synthetic comparatives if Agr is inserted at the highest DegP. The inflection of synthetic superlatives will work in much the same way, with the superlative morpheme occupying the same linear position as comparative *-er*. Importantly, the present proposal likewise extends to the problem of analytic equatives, in which inflection does *not* occur on Deg. I repeat example (4) in (34a), and give the corresponding structure in (34b) after the rule for Agr node insertion has inserted Agr at DegP:

(34) a. ein [so schlecht-**es**] Hotel
a so bad-**INFL** hotel
'as/so bad a hotel'

b.



Because the Agr node is inserted at the edge of DegP, and the right-most element element inside DegP is the adjective *schlecht* ('bad'), the account correctly predicts that inflection will only occur on A, and not on Deg, in pre-nominal analytic degree constructions:

(35) a. **Linearization**:

[$_{\text{DEGP}}$[$_{\text{DEGP}}$ so schlecht] ∗ es]

b. **Local dislocation**:

[$_{\text{DEGP}}$ so schlecht + es]

c. **Surface form**:

so schlechtes

To summarize, by modifying Norris's proposal to the effect that Agr is inserted at DegP rather than A, the inflection observed on pre-nominal degree modifiers is straightforwardly accounted for, both in the analytic and synthetic case. In synthetic comparatives and superlatives, inflection occurs outside Deg, because the adjective has moved to the left of Deg, leaving it in the right-most position before Agr. In the case of analytic equatives, only the adjective is inflected, due to its peripheral position within the modifier. In the next section, I provide further motivation for the present account based on the inflection of complex degree modifiers.

5.6 Complex degree modifiers

Aside from synthetic comparatives and superlatives, another problem for Norris's (2014) account is found in phrasal inflection in complex degree modifiers that contain an overt standard of comparison (17) (repeated from (1)) or equation (18) (repeated from (8)):

(36) *Overt standard of comparison*

a. ein [braun-er als braun-**es**] Auto
a brown-COMP than brown-**INFL** car

b. *ein [braun-er**-es** als braun(-**es**)] Auto
a brown-COMP-**INFL** than brown-**INFL** car
'a car that's browner than brown.' Roehrs (2006: 222)

(37) *Overt standard of equation*

a. ein [so schnell wie möglich**-es**] Aufräumen
an as fast as possible-**INFL** cleaning-up

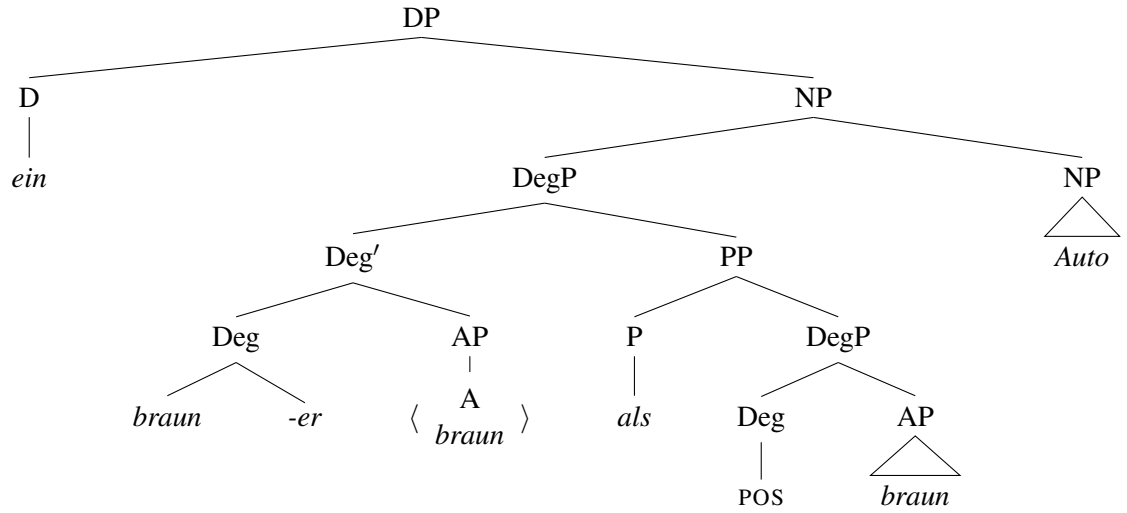
b. *ein [so schnell**-e** wie möglich(**-es**)] Aufräumen
an as fast-**INFL** as possible-**INFL** cleaning-up
'the cleaning up that's as fast as possible' Roehrs (2006: 222)

As can be expected from a system of phrasal inflection, only the rightmost adjective in both (36) and (37) may be inflected. Note moreover that in neither case is the inflected adjective the head of the modifier – it is simply the rightmost element. Such examples therefore clearly reveal that the

agreement morpheme tacks on to whatever the rightmost adjective is, regardless of head status or the presence of other adjectives, warranting some refinement to Norris's (2014) proposal.

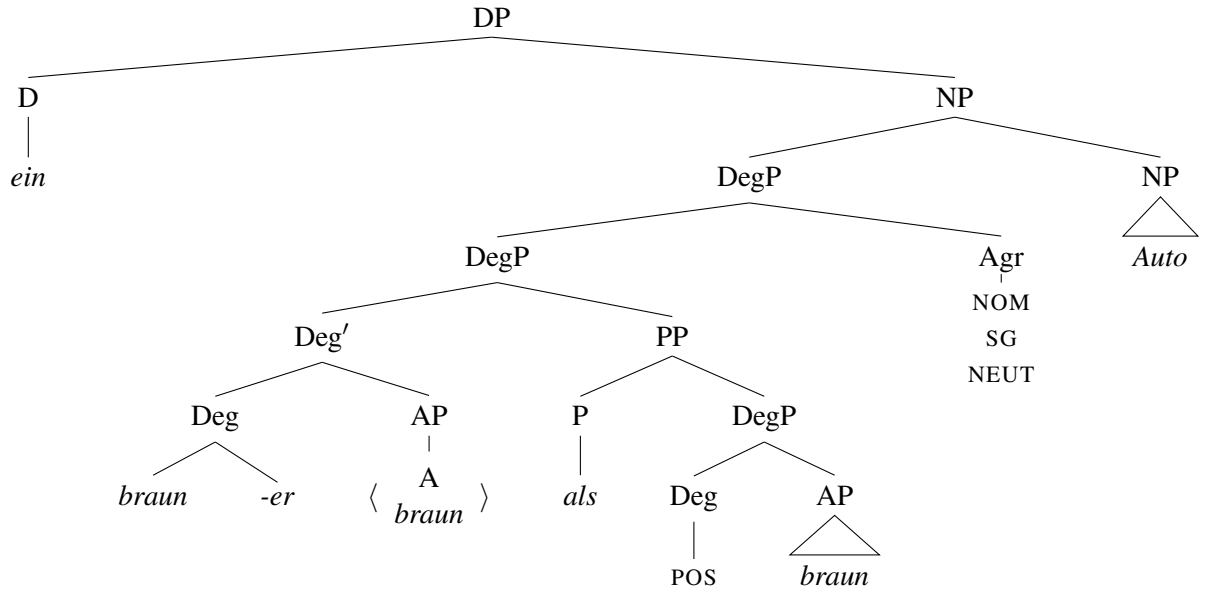
Recall that in Roehrs's analysis, the inflectional pattern follows from the fact that the entire modifier moves past an inflectional head, which then suffixes onto the edge of the phrase. On the current approach, the pattern is instead captured by the insertion of Agr at the structurally highest DegP. The underlying structure of a pre-nominal comparative such as that in (36) is shown in (38):

(38)



Given this stucture, the rule of Agr node insertion in (23) will apply at the DegP adjacent to the noun, in this case at the maximal DegP projection adjacent to *Auto* ('car'). The application of this rule along with feature copying will result in the following structure:

(39)



This structure is then linearized, and Agr undergoes Local Dislocation with the rightmost element, which in both cases is the adjective housed in the standard of comparison or equation rather than the head of the entire modifier. The postsyntactic derivation proceeds as follows:

(40) a. **Linearization**:

[$_{\text{DEGP}}$[$_{\text{DEGP}}$ braun ∗ er ∗ als ∗ braun] ∗ es]

b. **Local dislocation**:

[$_{\text{DEGP}}$ braun ∗ er ∗ als ∗ braun + es]

c. **Surface form**:

brauner als braunes

To summarize, complex degree modifiers pose a problem for the rule of Agr node insertion as formulated in Norris (2014). The phrasal inflection observed in such examples can however be accounted for by the present system, according to which Agr is inserted not at A, but at DegP, and undergoes local dislocation with the element it directly follows.

5.7 Coordination

In this section I move on from the discussion of complex degree modifiers to the case of coordinated adjectives. Coordination presents one case where phrasal inflection is not always observed in German: most coordinated adjectives exhibit across-the-board (ATB) inflection. I first discuss typical cases of ATB inflection seen in coordination and explain how the present account can extend to these data if we adopt the notion of pointwise attachment in the postsyntactic component, following a related proposal by (McNabb 2012). I then move on to show how mixed cases of inflection within coordinated structures lend evidence both to the present proposal and to the need for pointwise attachment.

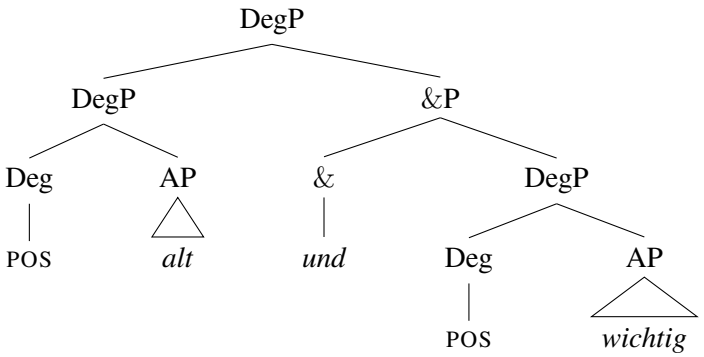
5.7.1 ATB inflection

When two (or more) adjectives are coordinated in German, all adjectives are inflected, as in (41):

(41) ein [alt-**es** und wichtig-**es**] Buch
an old-**INFL** and important-**INFL** book
'an old and important book'

Going forward, I assume an adjunction structure along the lines of Munn (1993):

(42)

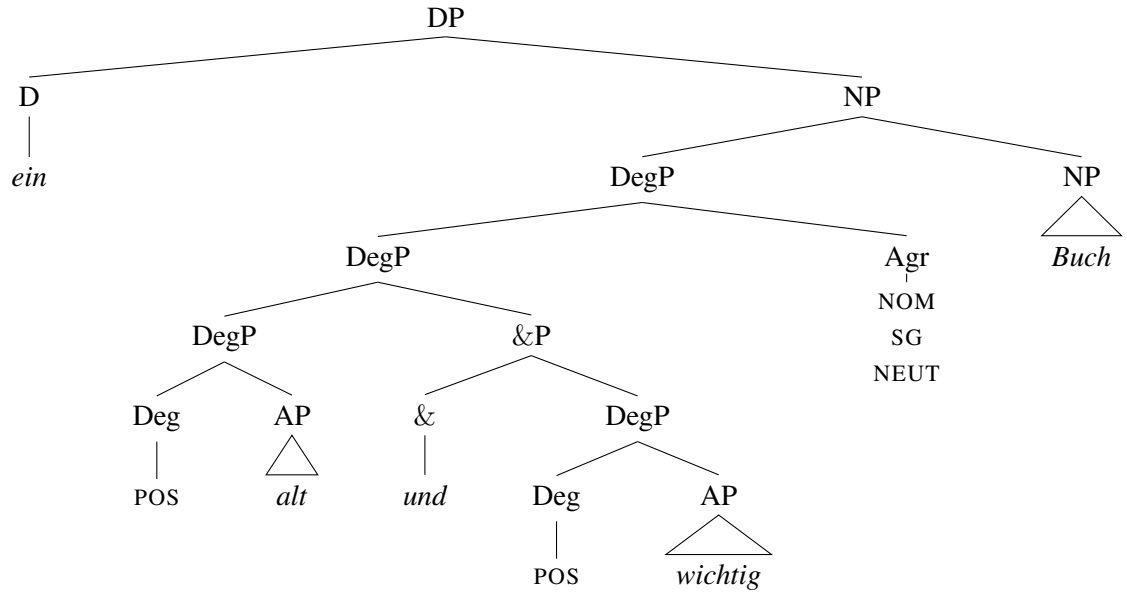


Given this structural assumption, the proposal for Agr node insertion as currently stated falsely predicts (43) to be grammatical:

(43) *ein [alt und wichtig-**es**] Buch
an old and important-**INFL** book
Intended: 'an old and important book'

This is because Agr will be inserted at the maximal DegP in the structure, resulting in (44):

(44)



The ill-formed (43) is predicted to be grammatical because only one Agr node is inserted according to the rule in (23), namely the one directly preceding the NP. This prediction is of course problematic, as all types of coordination in German exhibit ATB, and not phrasal, inflection. I show this below with a variety of coordinators in the language:

(45) *und* 'and'

a. ein [alt-**es** und wichtig-**es**] Buch
an old-**INFL** and important-**INFL** book

b. *ein [alt und wichtig-**es**] Buch
an old and important-**INFL** book
'an old and important book'

(46) *zwar . . . aber* 'albeit . . . though'

a. ein [zwar lustig-**es** aber auch wichtig-**es**] Buch
a though funny-**INFL** but also important-**INFL** book

b. *ein [zwar lustig aber auch wichtig-**es**] Buch
a though funny but also important-**INFL** book
'a funny though important book'

(47) *sowohl . . . als auch* 'both . . . and'

a. ein [sowohl spannend-**es** als auch interessant-**es**] Buch
a both exciting-**INFL** as also interesting-**INFL** book

b. *ein [sowohl spannend als auch interessant-**es**] Buch
a both exciting as also interesting-INFL book
'a book that's both exciting and interesting'

(48) *weder . . . noch* 'neither . . . nor'

a. ein [weder spannend-**es** noch interessant-**es**] Buch
a neither exciting-**INFL** nor interesting-**INFL** book

b. *ein [weder spannend noch interessant-**es**] Buch
a neither exciting nor interesting-**INFL** book
'a book that's neither exciting nor interesting'

(49) *entweder . . . oder* 'either . . . or'

a. ein [entweder spannend-**es** oder interessant-**es**] Buch
an either exciting-**INFL** or interesting-**INFL** book

b. *ein [entweder spannend oder interessant-**es**] Buch
an either exciting or interesting-**INFL** book
'a book that's either exciting or interesting'

To account for this apparent counterexample to the present proposal, I build on McNabb's (2012) work on definiteness marking in degree modification in Arabic and Hebrew, in which he argues that Agr may attach *pointwise* in coordinated structures (see also Hankamer 2008; Kramer 2010).[13] I argue that pointwise attachment of Agr can also explain the ATB inflection of coordi-

13. N.B. McNabb (2012) assumes a ternary structure for coordination.

nated adjectives in German. The core idea behind McNabb's proposal is that coordinate structures consist of unordered sets, as in (50). While the linearized order of both conjuncts mirrors their hierarchical structure, they are still visible to postsyntactic operations as individual structures within the unordered set, which may be acted upon by linerar operations such as local dislocation.

(50) Coordination Structure Linearization: $[\mathrm{X}] \,\&\, [\mathrm{Y}] \rightarrow \{\mathrm{X}, \mathrm{Y}\}$

Both conjuncts in the ordered set are therefore subject to local dislocation with Agr postsyntactically, as long as the coordinated phrase is the right-most modifier preceding the noun, satisfying the locality condition in the contextual rule for Agr node insertion. The pointwise application of Agr within an unordered set is shown in (51):

(51) Agr Pointwise Attachment: $\{\mathrm{X}, \mathrm{Y}\} * \textsc{agr} \rightarrow \{\mathrm{X} + \textsc{agr}, \mathrm{Y} + \textsc{agr}\}$

The postsyntactic derivation in (52) shows how this proposal achieves the correct result for coordinated adjectives. The crucial step is in (52c), in which Agr undergoes local dislocation with both conjuncts, suffixing onto both.

(52) a. **Linearization**

$[_{\textsc{DegP}}\, [_{\textsc{DegP}}\, \{$ alt, wichtig $\}_{und}\,] * \text{es}\,]$

b. **Local dislocation**

$[_{\textsc{DegP}}\, \{$ alt, wichtig $\}_{und} * \text{es}\,]$

c. **Pointwise attachment of Agr**

$[_{\textsc{DegP}}\, \{$ alt + es, wichtig + es $\}_{und}\,]$

d. **Surface form**

altes und wichtiges

In sum, what appears to be a counterexample to the rule for phrasal inflection in German can be remedied with the proposal that local dislocation between Agr and its preceding element

may proceed in a pointwise fashion. I now turn to cases of mixed inflection in different types of coordination and show how they lend support both to the present proposal as well as the need for pointwise attachment in coordinate structures.

5.7.2 Inflection with the degree modifier sehr ('very')

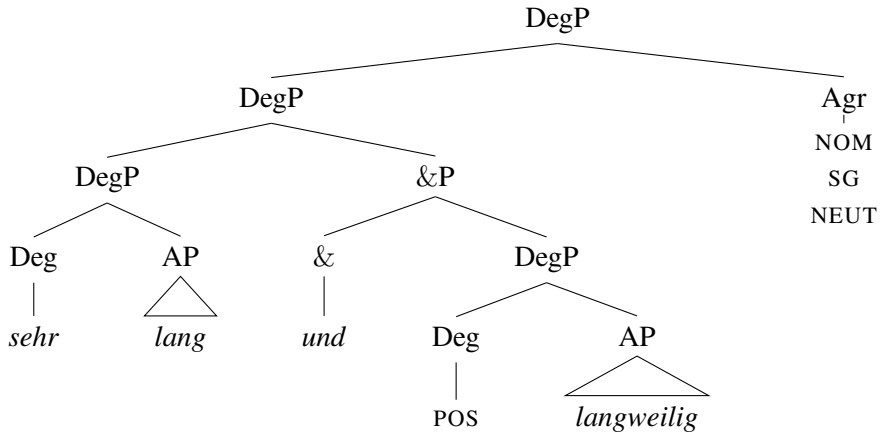
One piece of evidence lending support to the need for pointwise attachment comes from ambiguous scope effects associated with degree modifiers such as *sehr* ('very'). On both its narrow and wide scope interpretations, both adjectives in a coordinate structure folllowing this modifier must be inflected, despite corresponding differences in their syntactic structure. On the narrow scope reading, *sehr* modifies only the first adjective in coordination: *lang* ('long'):

(53) *narrow scope*

ein [[sehr lang-**es**] und [langweilig-**es**]] Buch
a very long-**INFL** and boring-**INFL** book
'a book that's boring and very long'

The structure for this interpretation is shown in (54), in which the degree modifier scopes only over the first adjective:

(54)



The inflection of both adjectives under this structure and reading falls out from the current

analysis due to the fact that the coordinate structure is adjacent to the insertion site of the Agr node: the locality condition between the coordination site and Agr is met, and so Agr undergoes pointwise attachment:

(55) a. **Linearization**

$[_{\text{DEGP}} [_{\text{DEGP}} \{$ sehr lang, langweilig $\}_{und}] * \text{es}]$

b. **Local dislocation**

$[_{\text{DEGP}} \{$ sehr lang, langweilig $\}_{und} * \text{es}]$

c. **Pointwise attachment of Agr**

$[_{\text{DEGP}} \{$ sehr lang + es, langweilig + es $\}_{und}]$

d. **Surface form**

sehr lang und langweiliges

I would now like to note that the ATB pattern in coordinate structures is however also consistent with an alternative proposal, namely that Agr is inserted not at the maximal DegP, but at each DegP. This would achieve the same result as pointwise attachment, as both conjuncts are housed in a DegP shell in (54), both would be inflected. The wide scope reading is therefore important because it shows that this alternate analysis is not tenable. In the wide scope interpretation, *sehr* scopes over both adjectives that it precedes:

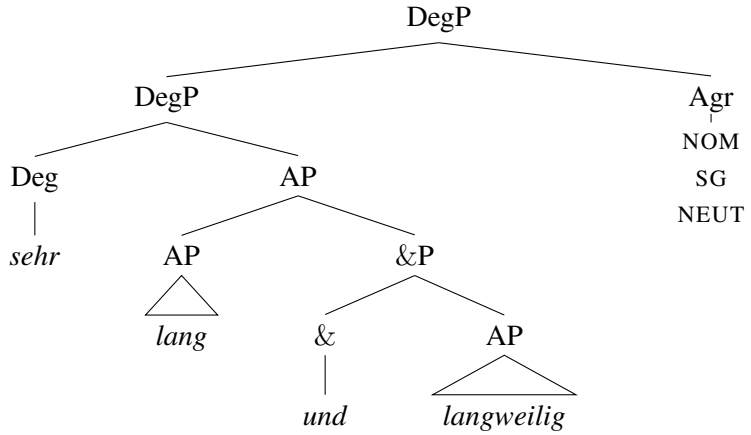
(56) *wide scope*

ein [sehr [lang-**es** und langweilig-**es**]] Buch
a very long-**INFL** and boring-**INFL** book

'a book that's very long and very boring'

This difference in interpretation is reflected by a difference in structure, in which *sehr* takes scope over both adjectives in the coordination:

(57)



Given this structure, we would expect to find the ungrammatical (58) on the wide scope reading without the application of pointwise attachment. This is because only one DegP is present in (57) to host the Agr morpheme, at the right edge of the entire modifer.

(58) *ein [sehr [lang und langweilig-**es**]] Buch
a very long and boring-**INFL** book
Intended: 'a book that's very long and very boring'

Crucially, under the current approach the phrasal inflection is explained by pointwise attachment, as shown in (59). This is because the coordinate structure still immediately precedes Agr in the structure in (57), and so it is predicted to undergo pointwise attachment with the rightmost element of each conjunct.

(59) a. **Linearization**

$[_{\text{DEGP}}\ [_{\text{DEGP}}$ sehr { lang, langweilig $\}_{und}$] $*$ es]

b. **Local dislocation**

$[_{\text{DEGP}}$ sehr { lang, langweilig $\}_{und} *$ es]

c. **Pointwise attachment of Agr**

$[_{\text{DEGP}}$ sehr { lang + es, langweilig + es $\}_{und}$]

d. **Surface form**

sehr lang und langweiliges

The scope facts therefore lend evidence to the need for the current formulation of Agr node insertion with the addition of pointwise attachment, rather than an apparent alternative proposal, according to which Agr in inserted at each DegP.

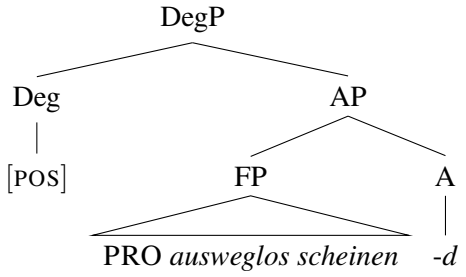
5.7.3 Pre-nominal participles

Another type of evidence lending support to the need for pointwise attachment of Agr comes from phrasal inflection in pre-nominal constructions involving participles. For example, the present participle *scheinend-* 'seeming' may modify other adjectives pre-nominally:[14]

(60) eine [ausweglos scheinen-d**-e**] Lage
a hopeless seeming-ADJ-**INFL** situation
'a hopeless-seeming situation'

I assume that the present participle in attributive position is formed by adding the suffix *-d* to the infinitive (the reason for this will become clearer in the section on *tough*-movement in 5.8). I assume a structure for these constructions along the following lines, according to which the *-d* suffix turns the entire 'seem'-phrase into an adjective:

(61)



The idea that the participle can act as an adjective is supported by the fact that it may occur in environments such as the superlative (62):[15]

14. Schlögel, Karl: Petersburg, Munich & Vienna: Carl Hanser Verlag 2002, pg. 515. Accessed via the Digitales Wörterbuch der deutschen Sprache (Digital Dictionary of the German Language), accessible at:

15. This example comes from http://www.karokafka.net/2014/08/ein-paar-worte-zum-bloggertreffen-koln.html. I note here that there are adverbs that take superlative morphology, but they do not take adjectival inflection and are

(62) Marco, der wohl tanzen-d-**st**-e Mensch der Welt
Marco the PRT dance-ADJ-SUP-INFL person in.the world
'Marco, probably the danciest person in the world.'

In an example such as (61), Agr will be inserted at DegP and the predicted result is correct, in which only the right-most adjective *scheinend* bears inflection, as shown in (63):

(63) a. **Linearization**:

$[_{\text{DEGP}}[_{\text{DEGP}}$ ausweglos scheinend $] * \text{e}]$

b. **Local dislocation**:

$[_{\text{DEGP}}$ ausweglos scheinend + e $]$

c. **Surface form**:

ausweglos scheinende

However, we also see mixed cases in coordination and variation in inflection. In the first case, shown in (64), only the participle is inflected. When this inflectional pattern surfaces, both preceding adjectives are interpreted under *seem*.

(64) eine [[kompetent und geeignet] scheinen-d-**e**] Politikerin
a competent and suitable seeming-ADJ-**INFL** politican
'a politician that seems competent and suitable'

From a structural perspective, this interpretation is captured if both adjectives are embedded under *seem* in the FP in (65), with the resulting meaning of a politician that is both competent-seeming and suitable-seeming:

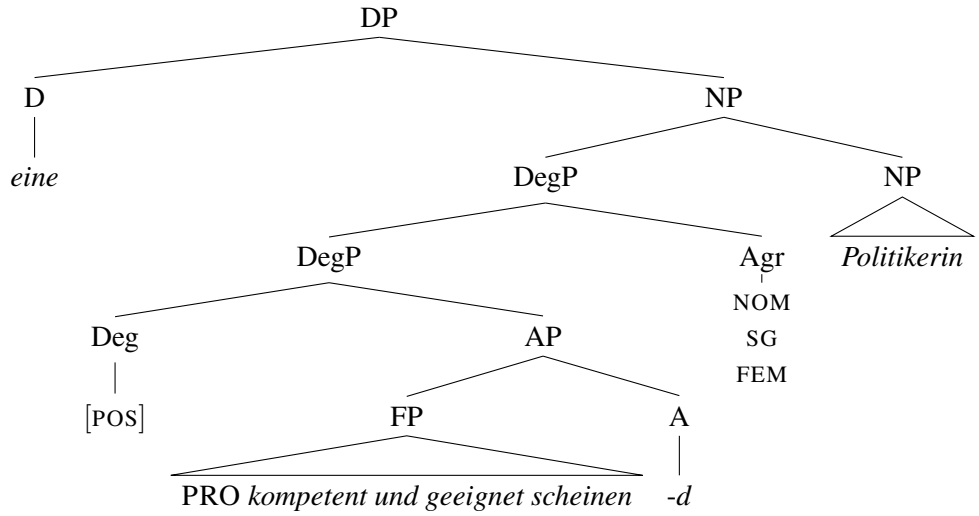
---

generally part of a complex modifier. An example of this is given below:

(i) ein höch-st-interessant-es Buch
a high-SUP-interesting-INFL book
'a highly interesting book'

In such cases, the superlative adverb leads to an intensified reading of the adjective it modifies.

(65)



Given this structure, the present proposal makes the correct predication that neither *kompetent* nor *geeignet* should be inflected, but only the entire phrase: the coordinated AP is embedded inside FP, whose right-most element is the adjectivalizing suffix *-d* (which is not part of the coordinate structure), rather than the coordinate structure itself, and is therefore not adjacent to Agr. For this reason, pointwise attachment cannot apply: local dislocation is crucially *local*, and both conjuncts are too far away. This is reflected in the steps in (66):

(66) a. **Linearization**:

[$_{\text{DEGP}}$[$_{\text{DEGP}}$ kompetent ∗ und ∗ geeignet ∗ scheinen * d] ∗ e]

b. **Local dislocation**:

[$_{\text{DEGP}}$ kompetent ∗ und ∗ geeignet ∗ scheinen ∗ d + e]

c. **Surface form**:

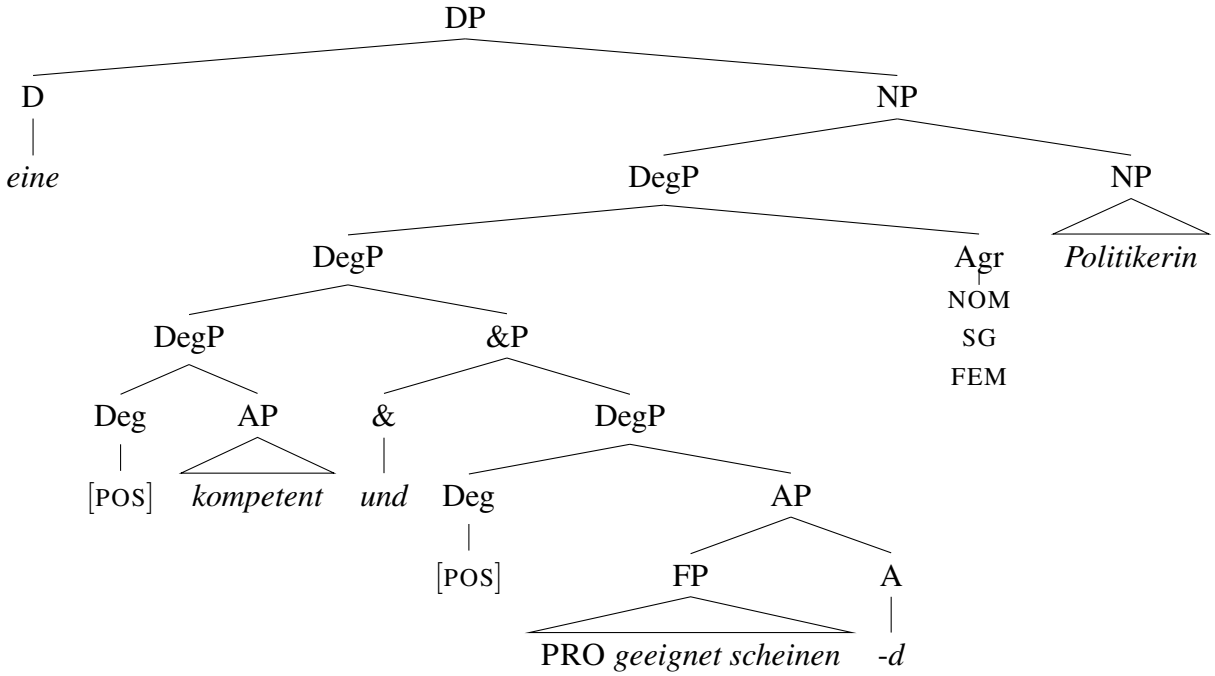
kompetent und geeignet scheinende

Under a different interpretation however, the left-most adjective is also inflected in addition to the participle *scheinend*:

(67) eine [[kompetent**-e**] und [geeignet scheinen-d**-e**]] Politikerin
a competent**-INFL** and suitable seeming-ADJ**-INFL** politican
'a politician that is competent and seems suitable'

The resulting difference in interpretation – one of a politician that is suitable-seeming and competent (but crucially not competent-seeming) – accordingly reflects a different underlying structure, as shown in (68). In this case, the coordinated phrase is directly adjacent to the inserted Agr node.

(68)



It is crucial that the coordinated phrase in (68) is directly adjacent to the NP, rather than more deeply embedded inside the FP as in the previous case. Based on this structural position, the present account correctly derives the inflectional pattern once again: as the locality condition is met, pointwise attachment obligatorily applies, and ATB inflection results. The postsyntactic steps after Agr node insertion are shown in (69):

(69) a. **Linearization**

[DEGP [DEGP { kompetent, geeignet scheinend }$_{und}$] $*$ e]

b. **Local dislocation**

[$_{\text{DEGP}}$ [$_{\text{DEGP}}$ { kompetent, geeignet scheinend }$_{und}$ $*$ e]]

c. **Pointwise attachment of Agr**

[$_{\text{DEGP}}$ [$_{\text{DEGP}}$ { kompetent + e, geeignet scheinend + e }$_{und}$]]

d. **Phonological representation**

kompetente und geeignet scheinende

In sum, we find evidence for the need for pointwise attachment both from inflectional facts concerning scope and participal constructions in German. In the case of the former, we find one inflectional pattern with two distinct underlying structures. In the case of the latter, we find two inflectional patterns reflecting a difference in structure. In both cases, an account in which Agr is inserted at DegP and undergoes local dislocation just in case it is adjacent to a coordinated phrase makes precisely the right predictions, and is therefore preferable both to Norris's (2014) account as well as to an alternate account according to which Agr is inserted at every attributive DegP.

Before moving on, I would like to point out that ATB inflection in coordination is a problem for existing syntactic accounts of inflection (Roehrs 2006 et seq.; Leu 2008, 2015). As far as I know, those authors do not address this issue, though the fact that their proposals focus on capturing the phrasal facts leads to a lack of explanation for ATB patterns. The postsyntactic account that I have proposed therefore offers the first explicit account of both phrasal and non-phrasal inflection in German. While I have not explicitly argued against previous syntactic accounts, they face real challenges from the coordination data presented here in the way they are currently formulated.

5.8 *Tough*-movement

In this section I discuss a construction in German analogous to *tough*-movement in English (Rosenbaum 1967) on its attributive use. I show that previous accounts attributing a lack of inflection to the adverbial status of what appear to be *tough*-adjectives can in fact be explained by the present analysis of phrasal inflection.

5.8.1 Pre-nominal tough-movement in German

The following example illustrates the construction under discussion with the adjective *leicht* ('easy') and a *zu*-infinitival following it (i.a. Breckenridge 1975; Thiersch 1978):[16]

(70) Das Buch ist [leicht zu lesen].
the book is easy to ready
'the book is easy to read.'

In English, constructions of this kind are always predicative, and cannot occur attributively.[17]

(71) a. The book is [easy to read].
b. *the [easy to read] book

In German however, unlike in English, they can also be found in attributive position, as in (72). As we saw in the case of the participle *scheinend* ('seeming') above, these modifiers also exhibit phrasal inflection:

(72) ein [leicht zu lesen-d**-es**] Buch
an easy to read-ADJ**-INFL** book
'a book that's easy to read.'

In examples such as (72), note that the form of the verb is no longer an infinitive as it is in (70), but takes the form of the present participle, which is formed by adding the suffix *-d*, which I treat as an adjectivalizer (as above, in the case of the *scheinend-*). In this case, the status of *-d* as an adjectivalizer becomes clear: the meaning of *lesend* ('read') in (72) does not have the meaning of a participle, rather, the adjectivalizer appears to be added simply for the sake of inflectional purposes. As shown in (73), the infinitive on its own may not be inflected:

16. http://www.bento.de/future/diese-buecher-solltest-du-bis-30-gelesen-haben-770512/

17. This is potentially due to the so-called Head Final Filter (i.a. Williams 1982; Haider 2004; Sheehan 2012), though the constraint is apparently violated in German. I return to this issue in §5.10.

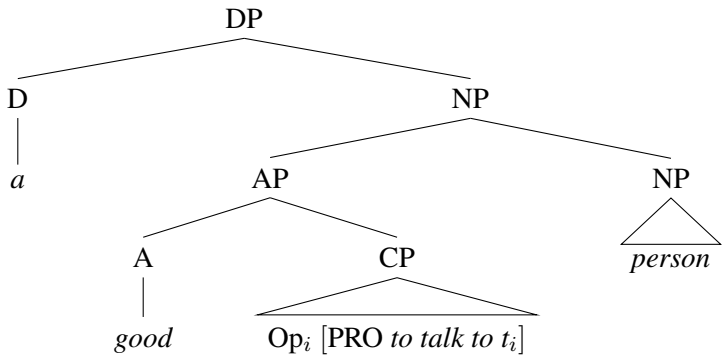
(73) *ein [leicht zu lesen-d**-es**] Buch
an easy to read-**INFL** book
Intended: 'a book that's easy to read.'

Fleisher (2008) discusses one related construction in English, which he calls the *clausal attributive-with-infinitive* construction (also referred to as the 'tough nut' construction by Berman (1974)). This construction is exemplified in (74):

(74) a [good person] to talk to

Examples such as (74) resemble *tough*-movement but differ in that the *tough*-adjective precedes a noun, rather than following it. Fleisher proposes the following structure to account for this construction, proposing that the infinitive is generated as an adjectival complement but then extraposes, on a par with the *than*-clause in comparatives (Fleischer 2008: 164):

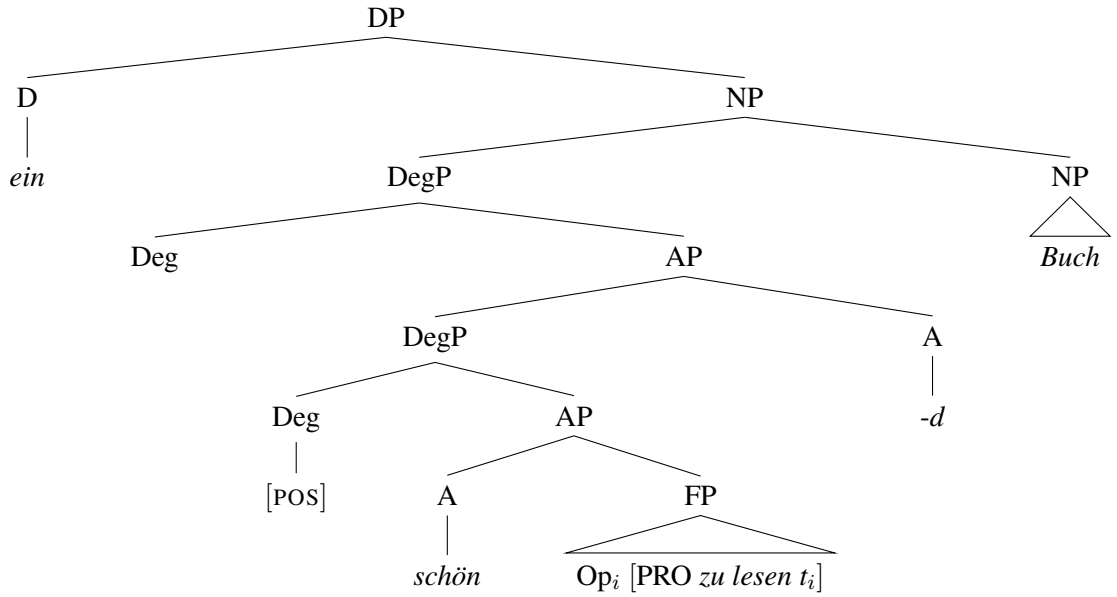
(75)



I adopt a modified version of the structure in (75) for attributive *tough*-movement constructions in German, in which PRO is present in the embedded clause. I also adopt Salzmann's (2013) proposal that infinitival *zu* in German heads an FP. Unlike Fleisher, I also maintain the analysis that all adjectives are housed in a DegP shell; the entire adjectivalized *tough*-construction therefore receives one as well, after it is adjectivalized by the *-d* suffix:[18]

18. I do not specify the exact size of the infinitival here, though it as least as large as a VP. This is supported by the fact that the verb may still select arguments, as shown in (i):

(76)



At this point I would like to note that previous discussions of this construction in German have argued that what looks like the *tough*-adjective is not truly an adjective like it is in English, but rather an adverb (Comrie 1997). One major piece of evidence cited for this claim is the fact that it is uninflected. However, there is interpretative evidence that the German construction is in fact an instance of *tough*-movement. This can be seen in the distinction between modal vs. non-modal readings observed in these contexts. Consider first the example in (77), which contains the temporal adverb *täglich* ('daily'):

(77) ein [täglich zu lesen-d-es] Buch
a daily to read-ADJ-INFL book
'a book that's to be read daily.'

Examples such as (77) obligatorily receive a modal interpretation, as reflected in the English translation. Such constructions are reminiscent of non-finite subject relatives as discussed in Bhatt

(i) ein klein-en Kinder-n leicht zu erzählen-d-es Märchen
a small-INFL children-INFL easy to tell-ADJ-INFL fairy.tale
'a fairy tale that's easy to tell to small children.'

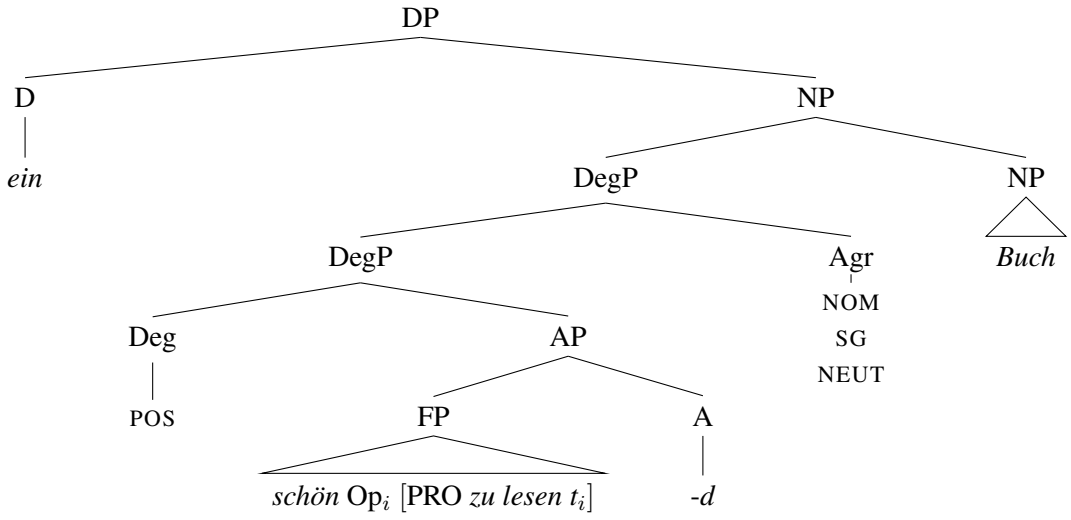
For more on the structure of infinitivals in German, see Wurmbrand (2001).

(1998). In the example in (72) (repeated in (78)) however, this reading is absent. Instead, (78) has the interpretation of a book that reads easily, and cannot mean something like 'a book that must be read in an easy way.'

(78) ein [leicht zu lesen-d-es] Buch
an easy to read-ADJ-INFL book
'a book that's easy to read.'

Importantly, the present analysis of phrasal inflection in German explains moreover why the form of the adjective is bare. The lack of inflection is therefore not a product of its adverbial status, but of phrasal inflection of the entire modifier. Taking for example the structure in (76), Agr node insertion will target the maximal DegP outside the *tough*-construction, resulting in the following:

(79)



Following the familiar steps from before, the account therefore correctly predicts that inflection will only surface on the right edge of the modifier (in this case on the adjectivalized infinitive), as shown in the steps in (80):

(80) a. **Linearization**:

[[schön zu lesen ∗ d] ∗ [e]]

b. **Local dislocation**:

[schön zu lesen ∗ d + e]

c. **Surface form**:

schön zu lesende

5.8.2 A problem: PP superlatives

A potential problem for this analysis comes from superlatives. There are two options to form an attributive *tough*-construction with a superlative in German. The example in (81) shows the first option, in which the superlative remains uninflected and occurs on its own:[19]

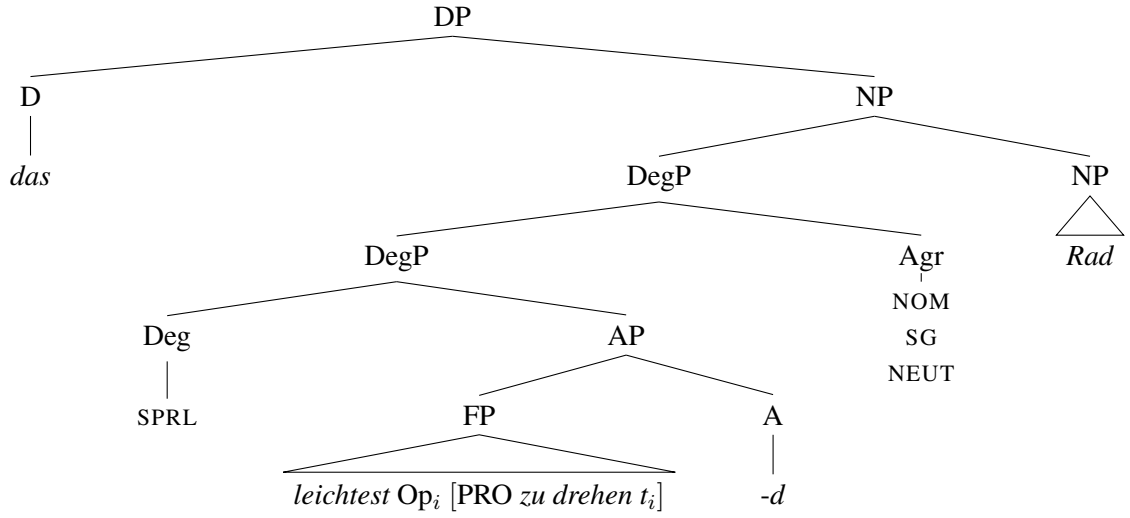
(81) % das [leicht-est zu drehen-d-e] Rad
the easy-SPRL to turn-ADJ-INFL wheel
'the wheel that's easiest to turn.'

The inflectional pattern observed in this strategy follows naturally from the present account. The phrasal inflection is exactly as predicted; this is because the Agr morpheme is, once again, inserted at the maximal DegP, at the right edge of the modifier:

19. This example comes from https://www.motor-talk.de/forum/bitte-um-erklaerung-vom-allrad-t2215563.html?page=1. Note that the superlative may never occur in its inflected form outside of a PP in this construction:

(i) *das [leicht-est-e zu lesen-d-e] Buch von Camus
the easy-SPRL-INFL to read-ADJ-INFL book of Camus
Intended: 'the book of Camus's that's easiest to read.'

(82)



Given this structure, local dislocation of Agr will result in the inflectional suffix surfacing on the right edge of the phrase, as desired:

(83) a. **Linearization**:

[[leichtest zu drehen ∗ d] ∗ [e]]

b. **Local dislocation**:

[leichtest zu drehen ∗ d + e]

c. **Surface form**:

leichtest zu drehende

Alternatively however, the superlative can occur in its prepositional form, as in (84):[20]

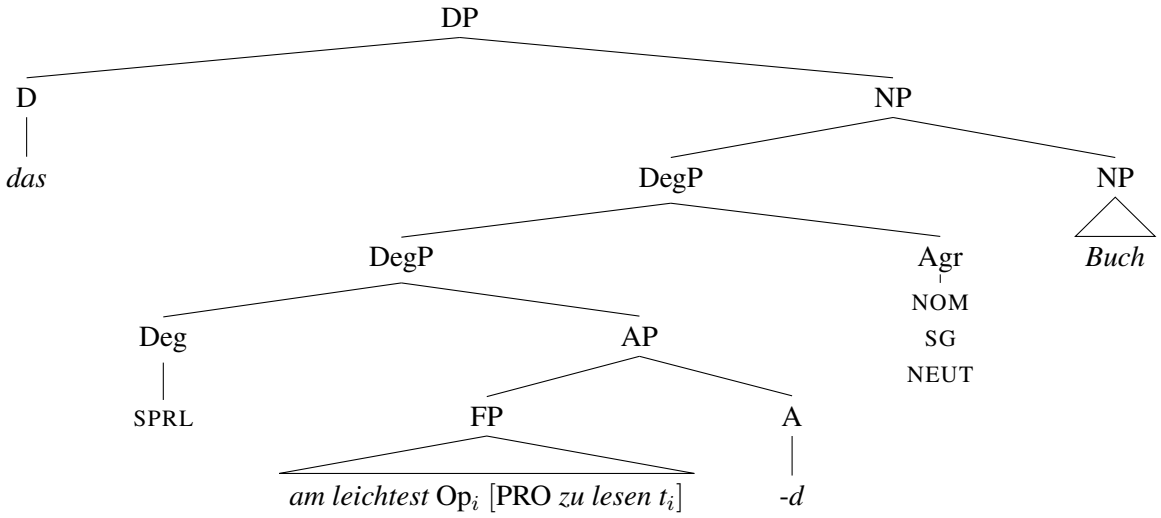
(84) das [am leicht-est-en zu lesen-d-e] Buch von Camus
the on+the easy-SPRL-INFL to read-ADJ-INFL book of Camus
'the book of Camus's that's easiest to read.'

Unlike in the first case, the inflectional properties of the PP superlative are problematic. In this case, both the superlative adjective and the participle are inflected, which is not predicted by the

20. Some speakers do not accept the bare superlative here, and only accept the PP option.

present account. Adopting the structure for *tough*-constructions that I have been using so far, the structure of (84) should be as in (85) after Agr node insertion:

(85)



This structure predicts the wrong inflection however, as only the participle will be inflected. The resulting inflectional pattern is ungrammatical:

(86) *das [am the leicht-est on+the easy-SPRL zu lesend-e] Buch von Camus to read-INFL book of Camus
Intended: 'the book of Camus's that's easiest to read.'

While I cannot offer a concrete solution to the problem posed by such examples, it is worth noting that the structure of superlative PPs is not well-known and might therefore hold the answer to this puzzle. For example, there is evidence that superlatives always have a nominal complement (Matushansky 2008), in which case there are two NPs present in (85) and therefore two sites for Agr node insertion. I leave this problem for future work.

5.9 Explaining inflection on 'same'

In this section I return to the apparent problem of inflection on *same*. Recall that the problem presented at the beginning of this chapter was as follows: Degree heads in German do not inflect

when they stand alone, as was seen in examples such as (87), repeated from (4):

(87) a. ein [so schlecht-**es**] Hotel
a so bad-**INFL** hotel

b. *ein [so-**es** schlecht(-**es**)] Hotel
a so-**INFL** bad-**INFL** hotel
'such a bad hotel'

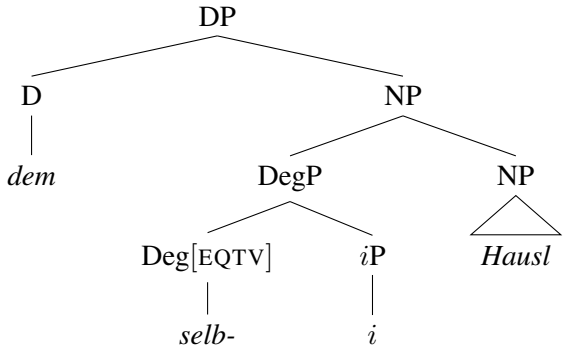
On the other hand, *same* must inflect, as shown in (88) (repeated from (3)):

(88) a. vom selb**-en** Haus
from.the same-**INFL** house

b. *vom selb Haus
from.the same house
'from the same house'

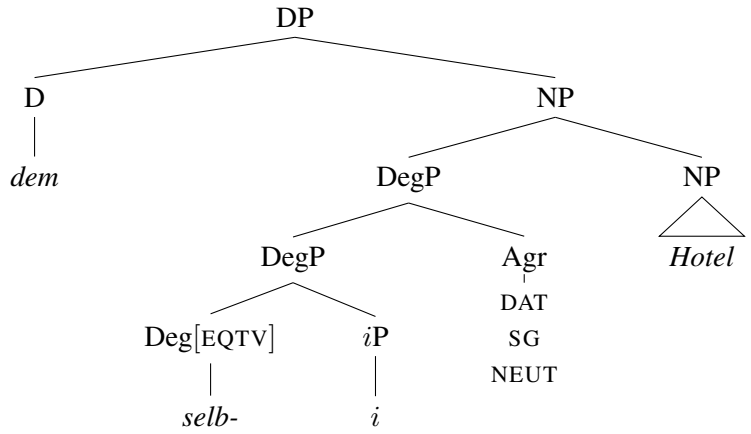
The treatment of *same* as a degree head therefore appears to be at odds with the inflection it bears. The present analysis however crucially explains why *same* bears the inflection it does, even though it is not an adjective. I show this taking the example in (88) as a test case, whose underlying structure is given in (89):

(89)



After the rule of Agr node insertion applies, the structure will look like that in (90):

(90)



At this point, Agr should locally dislocate with the closest element preceding it, which in this case is the head denoting the index, i. One difference between structures such as (90) and those we have seen before is that this index is of course phonologically null. As such, it is not a proper host for the inflectional suffix exponing Agr. For this reason, I propose that another step of local dislocation is required, namely, between the newly-bracketed [*i* Agr] sequence and *selb-*.[21] The steps of the postsyntactic derivation are shown in (91) (again where the vocabulary entries are represented as already having been inserted, merely for expository purposes):

(91) a. **Linearization**:

[[selb] ∗ [*i*] ∗ [en]]

b. **Local dislocation of *i* and Agr**:

[[selb] ∗ [*i* + en]]

c. **Local dislocation of *selb* and *i***:

[selb + *i* + en]

d. **Surface form**:

selben

Recall that in cases where an *as*-relative is present, the complement of *selb-* is a PP, rather than

21. There are other ways to go about this particular step; lowering is another option, as long as it precedes local dislocation.

an index. Assuming that this phrase extraposes to derive the correct word order along the lines of Guéron & May (1984), the inflectional facts will follow either if extraposition occurs in the syntax or if it occurs in the post-syntactic component (i.a. Truckenbrodt 1995; Chomsky 1995, 2005; Wurmbrand & Bobaljik 2005) before local dislocation. In either of these cases, or if one assumes that the *as-relative* is base-generated higher in the clause and is related to an index in the *as*-relative in some other way (e.g., along the lines of proposals for comparatives made by Kennedy & Merchant (2000) or Bhatt & Pancheva (2004), then the postsyntactic derivation will proceed exactly as it does in (91).

5.10 Implications for the Head Final Filter

In this section I examine implications that the complex modifiers above have for the Head Final Filter (i.a. Williams 1982; Haider 2004; Sheehan 2012). The Head Final Filter rules out structures in which non-head material intervenes between the head of a modifier and the noun it modifies, i.e., pre-nominal modifiers must be head-final. This filter has been claimed by Williams (1982) to rule out examples such as the following:

(92) *the $[_{AP}$ proud $[_{PP}$ of his children]] man. Williams (1982: 160)

Williams (1982) also cites data from German to motivate the existence of this filter. For example, in pre-nominal participial constructions involving overt complements, Williams claims that the normal VO order of German matrix clause (93a) is disrupted (93b) in order not to violate this filter:

(93) a. *der $[_{VP}$ rauchen-d-e $[_{DP}$ seine Pfeife]] Mann
the smoke-ADJ-INFL his pipe man

b. der $[_{VP}$ $[_{DP}$ seine Pfeife] rauchen-d-e] Mann
the his pipe smoke-ADJ-INFL man
'the man smoking his pipe.' Williams (1982: 160)

However, many of the examples from German discussed above constitute violations of the Head Final Filter, for example (94) (repeated from (1)), in which the PP specifier to Deg intervenes between it and the noun it modifiers *Auto* ('car'):

(94) ein [$_{\text{DEGP}}$ braun-er [$_{\text{PP}}$ als braun-es]] Auto
a brown-COMP than brown-INFL car
'a car that's browner than brown.'

While I do not offer an analysis of these exceptions here, I would like to point out that the German facts support a proposal according to which the Head Final Filter may be obviated as long as the offending element may – and does – bear inflection. This idea is supported by apparent counterexamples from other languages, namely Dutch and English.

First, data from van Riemsdijk (1998) show that inflection can play a role in determining when a non-adjectival modifier can occur pre-nominally. In the Dutch examples in (95), the adverb *genoeg* ('enough') may be pre-nominal in (a), but not (b). This is because the gender of *vliegtuig* is neuter and therefore the normal inflection on adjectives agreeing with it is null. The gender of *auto* ('car') on the other hand requires its modifier to be inflected with *-e*; since adverbs may not host inflection, the phrase is ungrammatical. Note that inflection of *snel* ('fast') does not save the example, as Dutch displays phrasal inflection in the same way that German does.

(95) a. een [snel genoeg] vliegtuig
a fast enough airplane
'an airplane that's fast enough'

b. *een [snel(-e) genoeg(-e)] auto
a fast enough-INFL car
Intended: 'a car that's fast enough' van Riemsdijk (1998: 673)

Based on these examples, van Riemsdijk suggests that the 'adjacency requirement' (a requirement formulated in this paper that is essentially the Head Final Filter by a different name) is driven by inflection, a suggestion that I would also like to put forward for the case of German.

Second, a related case comes from the possessive suffix in English (Karlos Arregi, p.c.). While the Head Final filter has been shown by Williams (1982) and others to be active in English, cases such as (96), in which a PP complement intervenes between the head of an AP and the noun it modifies, are acceptable, as long as possessive *-s* intervenes:

(96) A $[_{\text{NP}}$ grad student $[_{\text{PP}}$ of linguistics $]]$-'s dissertation

While I cannot say more about the interaction between inflection and the Head Final filter, it might be explained by the presence of the inflectional head on the right-hand side of the modifier. The presence of this head might "save" orderings that might otherwise violate the filter.

5.11 Lack of predicative agreement

In the last section of this chapter, I return to the lack of predicative agreement in German and evaluate the way that the present account handles this pattern. In the discussion of the rule I proposed for phrasal insertion, I suggested that there were two ways to conceive of the conditioning environment for Agr node insertion. The first rule I adopted was the following, repeated from (23):

(97) **Agr node insertion (for adjectival concord)**: DegP $\rightarrow$ $[\text{DegP Agr}^0]_{\text{DEGP}}$ /__ NP

This rule states that Agr should be inserted at a DegP iff it precedes an NP. As I mentioned in the discussion above, another way to think of this rule is to conceive of Agr as being inserted at each *maximal* projection of DegP, defined as follows:

(98) **Maximal projection**:
XP is maximal iff there is no XP immediately dominating it.

The two rules make different predictions about the lack of predicative agreement in German. The first rule suggests that Agr is never inserted on predicative adjectives, because the contextual requirement is not met. Adopting the idea that Agr node insertion is conditioned by the presence of a

maximal DegP, on the other hand, makes the prediction that Agr is in fact inserted but not exponed. If one adopts this route, one has to explain why agreement between the probe and goal fails in this case, even though it is successful in a variety of other languages. Adopting the original proposal, on the other hand, places the source of variation in the postsyntax: languages may vary according to what the precise environment for Agr node insertion is. I believe that this is the correct view, as it removes the onus to explain why agreement fails in German, but not in other, related languages.

5.12 Conclusion

In this chapter, I have provided a postsyntactic account of inflection in German that extends to a variety of inflectional patterns observed in pre-nominal degree modifiers. I have shown that postsyntactic approaches to adjectival concord along the lines of Norris (2012, 2014) are untenable for German as currently formulated. Problems for the particular formulation of his account were demonstrated with data from synthetic comparatives and superlatives as well as from complex degree modifiers, which exhibit phrasal inflection.

I have argued that we can capture all of these facts while maintaining a postsyntactic analysis in the spirit of Norris's proposal with the modification that Agr nodes are inserted at maximal DegPs, conditioned by the presence of an adjacent NP. I have shown moreover that pointwise attachment of Agr explains a potential counterexample of ATB inflection presented by coordinated adjectives, and provided evidence for the need of this process with data from varying scope and inflectional patterns involving the degree modifier 'very' as well as pre-nominal participial modifiers.

A crucial part of the discussion was to show that the apparent adjectival inflection of *selb-* in German does not necessitate its treatment as an adjective. Rather, the account proposed here explains the inflection of this degree head straightforwardly, without any modification. Finally, this chapter has also highlighted intriguing areas of future research on adjectival inflection in German, in particular the relationship between phrasal inflectional suffixes and the apparent obviation of the Head Final Filter.

CHAPTER 6

CONCLUSION

6.1 Summary of proposed analyses

In this dissertation, I have argued for two structurally distinct sources of anaphora and sameness in the DP. First, I built on previous proposals that anaphoric definites are structurally complex (Elbourne 2005, Schwarz 2009, Simonenko 2014), and provided further support for the treatment of indices as syntactic objects, rather than as mere notional devices. Support for this proposal was shown in how the presence of an index in anaphoric DPs can handle differences observed in the morphology of the 'strong' and 'weak' forms of the German definite article. More specifically, these morphological facts were shown to support the proposal that an index phrase, whose head is property-denoting and essentially a nominal modifier, intervenes between the determiner and nominal layers. Evidence for this particular syntactic configuration was given from Washo – an entirely unrelated language – which overtly realizes the proposed index layer.

Second, I showed that anaphora with the modifier *same* in fact arises from an altogether different structure from anaphora without it. Based on similarities between the behavior of *same* and degree elements, I proposed that anaphoric *same* is best understood as a degree head that selects for an index as its complement. In this way, *same* gives rise to anaphora in a different way from unmodified anaphoric definites. While evidence for the treatment of *same* as a degree head – as opposed to the obvious route, as an adjective – was grounded in its similarity to other degree expressions, this claim was shown to be supported again by Washo, a degree-less language (Bochnak 2013, 2015). I argued that the lack of a lexicalized word for *same* in a language that lacks degree morphology in general supports the claim that individual equation and other types of comparison are indeed part of the same 'family' of expressions, so to speak.

Related to this point, I argued that the ability of *same* to introduce an *as*-relative is a hallmark of degree expressions. I showed that degree heads of various types show a systematic alternation between anaphoric and clausally-modified readings, and *same* is no different. I therefore proposed

that both the index and the *as*-relative occupy the same structural position – as the complement of *same* within the DegP – as has already been suggested (*mutatis mutandi*) for other degree elements such as *such* (Anderson & Morzycki 2015) and comparative *-er/more* (Alrenga et al. 2012). Further, I proposed a treatment of *as*-relatives involving a matching account of relative structures, deriving various syntactic and interpretative properties of these clauses. Building on an insight from Matushansky (2010b), I also drew a comparison between *as*-relatives and restrictive relatives, showing that the latter may be selected by *same* in the same way as *as*-relatives, citing evidence for this proposal from languages such as Spanish. This proposal leads to the conclusion that restrictive relatives with and without *same* arise from different underlying structures, on a par with what we saw in anaphoric definites with and without this modifier.

Finally, I related the structure of attributive *same* to the inflectional behavior of other degree modifiers in German. I have shown that while the inflectional behavior of *same* might suggest that it is an adjective, this behavior is in fact explained by the phrasal nature of attributive inflection more generally. To explain the observed phrsal pattern, I proposed an account of inflection building on Norris (2014), arguing that inflection is realized on Agr nodes that are inserted postsyntactically at the level of the highest DegP in preceding the noun. I showed that this type of proposal accounts for the inflectional patterns on both analytic and synthetic degree modifiers in German, and explains the inflection observed on pre-nominal participles and in cases of coordination as well.

6.2 Take-away points

In this section, I summarize what I believe to constitute the core take-away points of this thesis.

6.2.1 Definite descriptions and the structure of DP

A large part of this dissertation was devoted to the investigation of the structure of the DP, with a particular focus on how different structural configurations may give rise to anaphoric interpretations. Importantly, this dissertation constitutes some of the first work dedicated to investigating the

structure of the DP that is informed by previously established semantic claims. The overall findings of the dissertation – both from German and Washo – support a view of the DP in which indices are structurally encoded, supporting the intellectual predecessors of Elbourne (2005), Schwarz (2009), and Simonenko (2014). The novel aspect of this claim is not only that clues from morphology and syntax guide the discovery of the precise location of this index, and have widened our understanding by showing that this index may be encoded in more than one place, i.e., heading its own functional projection in the extended projection of the nominal, or as the complement of a degree head. Finally, the discussion of DP structure in Washo has deepened our understanding of what the structural relationship between referring expressions is, as Washo reveals the close connection between demonstratives, definite articles, and pronouns both in its interpretation and morphology. Washo also provides a new perspective on what it means to be a definite description 'in disguise', by overtly exponing the index layer in anaphoric definites and on its own.

6.2.2 The relationship between degrees and individuals

The syntactic proposal that *same* is a degree head has opened the door to an investigation of the relationship between degrees and individuals. While I have merely scratched the surface of this topic, the data I have introduced from Washo show that this relationship is closer than may have previously been thought. I have argued that the lack of *same* in Washo is explained by the lack of degree expressions in the language. This argument proceeds from the claim that the degree syntax employed in anaphora and *as*-relatives involving *same* in fact 'piggy-backs' on the degree structures used elsewhere in a language. As Washo lacks degree constructions, there is no structure to co-opt in the case of individual-equating *same*. Of course an alternative view of these facts is that degree semantics is somehow at play even when equating individuals (as was suggested to me by Chris Kennedy). While the focus of this dissertation has been on the structure of the DP, I leave the possibility for a degree semantics that is compatible with what I have said here to future work. I have also shown that the use of *same* as an equator of individuals is not available cross-linguistically, warranting further exploration of the relationship between gradability and individual

equation.

6.2.3 Evidence from the interfaces

I have shown in various aspects of this dissertation that the syntax and semantics work together to give rise to anaphoric meanings. In the case of the anaphoric definites, the anaphoric component of the individual's meaning arises from a dedicated projection in the DP structure – *i*P. In the case of *same*, an anaphoric meaning arises again from a structurally encoded index, this time housed in the complement of Deg. Furthermore, an important aspect of this dissertation has been the formulation of syntactic analyses that rely on morphological clues. The particular syntactic proposals I have put forward would not have been possible without the footprints that structure leaves behind in the morphology. This was seen first in the case of contraction in German, and again in the various forms of referring expressions in Washo. In sum, I hope to have shown with this dissertation what work on the interfaces can contribute to the understanding of linguistic theory.

6.2.4 The importance of understudied languages

The final aspect of this dissertation that I would like to mention is the light it has shed on the importance of work on understudied languages. At first glance, the lack of a particular word – e.g., a word for *same* – in the language might lead to the conclusion that the language is not relevant to the theory being tested. However, a more detailed look at other properties of the language may reveal that negative evidence is likewise telling, as in the case of Washo and *same*. Outside of degree constructions, the data from Washo provide solid evidence that indices are encoded in the structure of anaphoric DPs. It is highly important in the testing of linguistic theory to evaluate claims against cross-linguistic data. Given the fact that Washo is entirely unrelated languages to the others discussed in this dissertation, it is all the more suggestive that the account extends to this language as well. Finally, aside from the documentation of new empirical phenomena in Washo, the analytical contribution that this language makes underscores the value that understudied languages have in advancing the field of linguistics.

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